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ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2001

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

UNITED STATES SENATE

ONE HUNDRED SIXTH CONGRESS

SECOND SESSION

ON

H.R. 4635, 4733, and 5483

AN ACT MAKING APPROPRIATIONS FOR ENERGY AND WATER DEVELOPMENT FOR THE FISCAL YEAR ENDING SEPTEMBER 30, 2001, AND FOR OTHER PURPOSES

Department of Defense
Department of Energy
Department of the Interior
Nondepartmental witnesses

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ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2001

TUESDAY, MARCH 21, 2000

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 10 a.m., in room SD–124, Dirksen Senate Office Building, Hon. Pete V. Domenici (chairman) presiding.

Present: Senators Domenici, Gorton, McConnell, Burns, Craig, Stevens, Reid, and Dorgan.

DEPARTMENT OF DEFENSE—CIVIL

DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS—CIVIL

STATEMENTS OF:

DR. JOSEPH WESTPHAL, ASSISTANT SECRETARY OF THE ARMY (CIVIL WORKS)

LT. GENERAL JOE N. BALLARD, CHIEF OF ENGINEERS

ACCOMPANIED BY:

GENERAL HANS A. VAN WINKLE, DEPUTY COMMANDING GENERAL FOR CIVIL WORKS

THOMAS F. CAVER, JR., CHIEF, PROGRAMS MANAGEMENT DIVISION, DIRECTORATE OF CIVIL WORKS

OPENING STATEMENT OF SENATOR PETE DOMENICI

Senator DOMENICI. Senator Reid is opening the Senate this morning on the minority side and he will be here shortly. In the meantime, I have an opening statement and then we'll proceed with your testimony.

First of all, it's a pleasure to welcome representatives of the Corps of Engineers and the Bureau of Reclamation to the subcommittee to review their budget request for fiscal year 2001.

Following our normal procedure of rotating the lead-off witnesses each year, we will first hear from the Corps of Engineers followed by the Bureau of Reclamation. I'm pleased to welcome you, Dr. Westphal, the Assistant Secretary for the Army for Civil Works. Likewise, you, Lieutenant General Joe Ballard, Chief of Engineers, and Major General Hans Van Winkle, the Director of Civil Works for the Corps.

Gentlemen, it is truly a pleasure to have you here this morning to present and testify on the fiscal year 2001 budget request for the Corps of Engineers.

RECOGNITION OF LT. GEN. BALLARD

General Ballard, it's indeed an honor to recognize you today, this being your final appearance before the subcommittee. I understand that you will be leaving the Army and the Corps of Engineers shortly after completing 4 years as the Chief of Engineers and 35 years of service to our country.

General, your dedication to the Corps and to our country is to be commended, and I and the entire subcommittee thank you for your assistance and hard work over the years. We wish you well in your future endeavors and hope that you will have more time to spend with your family and doing whatever you would like.

MEDIA COVERAGE OF THE CORPS

Gentlemen, we are all aware of the recent Washington Post articles which covered certain aspects of the Corps' program. We will get into that, I'm sure, during the questioning, but I want to say that while these articles raised some issues of concern, namely influencing the outcome of the study process and alleged activities of the Corps to "grow" their civil works program, the fundamental purpose of the Corps to oversee the development, management, protection and enhancement of our Nation's water resources is, in my opinion, very sound.

For over 200 years, the Corps has been the primary agency, along with the Bureau of Reclamation, for translating the Nation's water resources infrastructure needs into reality and getting things done.

The Corps' Civil Works program continues to provide billions of dollars of benefits to the Nation from deepdraft and inland navigation, billions of dollars of flood damages prevented annually and millions of dollars of forgotten environmental and recreational benefits that are provided as an integral part of each water resource project that is constructed. The project development process, established by Congress and carried out by the Executive Branch, is designed to maximize the benefits to our Nation—and we all understand that—while at the same time allowing review and input by Federal and State agencies and the general public.

And I'm hopeful, if we have time, we'll go through the Upper Mississippi Navigation Study Process and indicate in the record with diagrams, et cetera, where that is, show that the public input process is intact, it is strong and it has still got a long way to go in terms of that participation before the project is completed.

MAINTAINING ENGINEERING CAPABILITY

Another important but overlooked purpose of the Corps is to retain and maintain the capability to provide engineering and construction services to the Armed Services in support of the national defense.

Dr. Westphal, General Ballard and General Van Winkle, it is good to have you here this morning to talk about the Corps Civil Works program. And I hope that you, General Ballard in particular, will help the subcommittee understand the current state of the Corps of Engineers.

When Senator Reid arrives, we will do whatever he likes. If he wants to make a statement, we will interrupt and do that. If not, he will be here to do what he chooses today.

Having said that now, we're going to proceed to hear first Assistant Secretary Westphal and then you, General Ballard. Would you proceed? Your entire statement is going to be made a part of the record you may proceed.

STATEMENT OF JOSEPH WESTPHAL

Dr. WESTPHAL. Thank you, Mr. Chairman. It is a great pleasure to be with you here today and also I join you in recognizing and commending General Ballard for his 30-plus, 35 years of service to the Nation and to the Corps of Engineers, and we've worked together now almost 2 years since I've been on this job and so there is no question I'm going to miss him and I think the country is going to miss him in that regard.

Mr. Chairman, back in 1824, 176 years ago—and I'm not going to follow whatever statements you got, because I rewrote my statement last night so I'm just going to kind of tell you some different things here

Senator DOMENICI. Do you want to stand by that statement or do you want to throw it away?

Dr. WESTPHAL. The original statement is sort of cut and dry and all that.

Senator DOMENICI. It's in the record

Dr. WESTPHAL. It's in the record. But back in 1824, 176 years ago, Congress made its first appropriations to the Army Corps of Engineers for the "removal of snags, sawyers, planters and other impediments of that nature" from the Ohio and Mississippi Rivers.

That appropriations, Mr. Chairman, was $75,000. This year, the President's budget request for fiscal year 2001 totals $4.063 billion. It is $160 million above last year's budgeted request to you. And we expect that the non-Federal contributions and other sources to be approximately $395 million in fiscal year 2001, bringing the total funding to approximately $4.5 billion. So from the initial $75,000 appropriations in 1824, our investment in water and related land resources is estimated to be worth today over $124 billion.

From that initial job of clearing snags on the Ohio River, the Army Corps of Engineers now works to serve the Nation's needs in such areas as toxic and hazardous waste cleanup, recreation, disaster relief, shoreline protection, hydropower generation, flood protection, environmental restoration, and provides support for other functions of technical oversight and management of engineering, environmental and construction contracts performed by the private sector firms on a totally reimbursable basis.

Today, the Army Corps of Engineers is providing support to about 60 Federal, State and local governments. This year the President is requesting your support in funding three important initiatives that will greatly help our ability to integrate planning priorities, help us address an important backlog in maintenance of our infrastructure and protect lives, save money, and improve the environment through a nonstructural flood damage reduction program.

WATERSHED STUDIES

First, with the budget we are proposing to undertake four comprehensive watershed studies. In 1997, my predecessor, Martin Lancaster, made a presentation to the World Water Forum. He stated, "As we approach the 21st century, the need for new modes of interstate cooperation grows in both humid and arid areas. Reliance on court judgments has proved too expensive, inflexible, time consuming and precedent-bound to meet new needs realistically." I think he was right.

Strengthening our ability to work with our Federal, State and Tribal partners early in the process is critical. I believe our proposal can serve as a model for future planning efforts that yield positive results and quicker and more effective solutions to problems that will enable us to design and build good projects in the future.

Congresses and Presidents have greatly expanded the ability of the Corps of Engineers to meet both engineering demands as well as the environmental goals of society. Adding economics to the mix, we must now use an integrated approach to balancing all three priorities.

Our population continues to increase, we continue to be vulnerable to droughts as well as to many effects of unacceptable water as a result of storm water drainage, combined sewer overflows, non-point source pollution, and lack of modern water delivery and sanitation infrastructure.

We also have the needs of agriculture, flood control, industrial uses of water, and water supply for urban areas. These complex basin-wide issues can only be solved through a process that integrates the efforts of local stakeholders and State and Federal agencies.

Our strategy is simple. We have selected four major watersheds that face many of the problems listed above. The four pilot projects will undertake a comprehensive study of the water resources needs of the basin. We will identify Federal, Tribal, State and local partners that will share the costs and we will focus on solving problems.

The four pilot projects are the Rio Grande, the Lower Missouri-Middle Mississippi River basin, the White River in Arkansas, and the Yellowstone River in Montana.

Mr. Chairman and members of the committee, I have discussed these projects with many of you, seeking your advice and counsel. I want to work with Congress on the best possible plan to establish a partnership with the States involved and facilitate practical results that will enhance water resources for multiple uses and ensure the protection of the ecosystem.

I commit to work with you to expedite the study process and to produce tangible and workable solutions to already existing constraints on these great river basins.

MAINTENANCE BACKLOG

The second initiative is aimed at reducing our significant backlog of maintenance on our recreation areas. The Corps of Engineers is

responsible for 4,340 recreation areas at 456 lakes in 42 States. These recreation areas host 377 million visitors annually.

We are requesting $27 million in fiscal year 2001 to initiate the recreation modernization program which will replace or rehabilitate facilities at some of the more than 2,389 recreation areas that the Corps of Engineers manages directly.

Many of these facilities were constructed in the 1960s and 1970s and the combination of heavy use, lack of routine maintenance, and changes in visitor needs has caused significant deterioration of recreation facilities and the natural resource base of our lakes.

We hope to modernize about half the Corps-managed recreation areas over the next 5 to 10 years. These improvements include upgrading facilities, installing more family oriented facilities, and providing more access to water-related recreation activities.

CHALLENGE 21 INITIATIVE

The third initiative is our Challenge 21 program better known as the Riverine Ecosystem Restoration and Flood Hazard Mitigation Program.

The fiscal year 2001 budget request includes $20 million to initiate Challenge 21 authorized in WRDA 1999. This initiative expands the use of nonstructural flood hazard mitigation options and restoration of riverine ecosystems to allow more natural recession of floodwaters and provide other benefits to communities and the environment. Challenge 21 will create partnerships with communities and establish a framework for more effective coordination with key agencies.

The fiscal year 2001 budget for the Army Civil Works program includes $82 million to initiate new investments with a total of $1.6 billion—for a total of $1.6 billion. Of that total, $410 million will be financed directly by non-Federal sponsors, including lands, easements, rights of way and relocations.

In addition to the four comprehensive studies and two new programs I noted earlier, the fiscal year 2001 budget will include four new surveys, one new special study, one new preconstruction engineering and design (PED) project and 12 construction new starts.

The Administration is committed to the traditional missions of improving our navigation and transportation system, protection of local communities from floods and other disasters, and maintaining and improving hydropower facilities across the country.

Together with these important national priorities, the Army Corps of Engineers is also the Nation's premier environmental restoration agency.

PREPARED STATEMENT

This budget provides for continued development and management of the Nation's water resources infrastructure and the continuation of our work to enhance, protect and restore the environment. Thank you, Mr. Chairman.

[The statement follows:]

PREPARED STATEMENT OF JOSEPH W. WESTPHAL

Mr. Chairman and distinguished members of the subcommittee: Good morning. It is an honor and a pleasure to testify before this esteemed subcommittee of the Ap-

propriations Committee and to present the President's budget for the Civil Works program of the Army Corps of Engineers for fiscal year 2001. It funds a strong program for Civil Works and is comparable to the funding levels enacted by Congress in recent years.

Accompanying me this morning are Lieutenant General Joe N. Ballard, Chief of Engineers; Major General Hans A. Van Winkle, Deputy Commanding General for Civil Works; and Mr. Thomas F. Caver, Jr., Chief of the Programs Management Division, Directorate of Civil Works.

My statement covers the following subjects: the Fiscal Year 2001 Civil Works Program, the Harbor Services Fund Proposal, New Initiatives in the Army Civil Works Program, Other New Civil Works Investments, and Highlights of the fiscal year 2001 Continuing Program.

FISCAL YEAR 2001 CIVIL WORKS PROGRAM

The President's budget for the Army Civil Works program for fiscal year 2001 includes nearly $4.1 billion in the discretionary program, comparable to the amount appropriated for the program in fiscal year 2000 and $160 million above last year's budget proposal. Details are presented in Table A.

Last year I began by stating that Civil Works programs and policy must be based on strong partnerships with states and local communities as well as among federal agencies. We worked hard to build those partnerships, and the commitment of our non-Federal sponsors to cost share Civil Works projects demonstrates the strong support our program has across the country. With the non-Federal contributions and other sources, the total fiscal year 2001 funding for the Army Civil Works program is nearly $4.5 billion.

I remain committed to ensuring responsive and timely allocation of our resources to meet the Nation's needs. I look forward to working with both Houses of Congress to make this happen.

ARMY CIVIL WORKS NEW INITIATIVES

The Fiscal Year 2001 Civil Works program includes funding for three initiatives: Comprehensive River Basin Planning; Recreation Modernization; and Riverine Ecosystem Restoration and Flood Hazard Mitigation.

Comprehensive River Basin Planning

The first is an initiative that I strongly support and the Nation sorely needs. It has been nearly 20 years since the last major effort was initiated to understand and assess the complex relationships among various water resources problems and opportunities. On a river-basin wide basis, the Federal Government needs a comprehensive approach to water resources to work effectively with states, counties, tribes, and river basin authorities in assessing today's competing water uses.

The Army Civil Works fiscal year 2001 budget commits $2 million to initiate four broad river basin studies. These studies, which will be carried out in coordination with other federal agencies and regional stakeholders, will adopt a holistic approach and include multi-jurisdictional and trans-national considerations in resolving water resources issues. Two of these, the Rio Grande River Basin and the White River Basin in Arkansas, would proceed under the authority of section 729 of the Water Resources Development Act (WRDA) of 1986. The other two, the Yellowstone River Basin, Montana, and the Missouri and Middle Mississippi River Basins, would proceed under specific authorizations.

Recreation Modernization

I am also pleased to announce that we will invest construction dollars in an area long-overlooked our Nation's recreation areas. The Corps of Engineers is responsible for 4,340 recreation areas at 456 lakes in 42 states. These recreation areas host 377 million visitors annually.

The Civil Works fiscal year 2001 budget includes $27 million to initiate the Recreation Modernization Program. Under this program, we will replace or rehabilitate facilities at some of the 2,389 recreation areas that the Corps of Engineers manages directly. Most of the facilities at Corps managed recreation areas were constructed in the 1960s and 1970s. The combination of heavy use, lack of routine maintenance, and changes in visitor needs has caused significant deterioration of recreation facilities and the natural resource base at some of our lakes.

The $27 million in the fiscal year 2001 budget will begin to implement this program. We hope to modernize many of the Corps managed recreation areas over the next 5 to 10 years. These improvements include upgrading facilities, installing more family oriented facilities, and improving general access to water-related recreation opportunities.

Riverine Ecosystem Restoration and Flood Hazard Mitigation

I am also pleased to tell you that this year's budget includes $20 million to initiate the Challenge 21 Riverine Ecosystem Restoration and Flood Hazard Mitigation Program authorized by WRDA 1999. This initiative expands the use of nonstructural flood hazard mitigation measures and restoration of riverine ecosystems to allow natural moderation of floods and provide other benefits to communities and the environment. Challenge 21 will create partnerships with communities and create a framework for more effective coordination with key agencies to develop comprehensive flood damage reduction solutions, while restoring natural values of flood plains and wetlands.

NEW INVESTMENT PROGRAM

The fiscal year 2001 budget for the Army Civil Works includes $82 million for new investments with a total cost of $1.6 billion. Of that, $412 million will be financed directly by non-Federal sponsors (including lands, easements, rights-of-way, and relocations). The Federal share is $1.2 billion. Details are presented in Table B.

The fiscal year 2001 budget includes four new surveys, one special study, one new Preconstruction Engineering and Design (PED) start, four comprehensive studies, the three new programs that I have discussed, and 12 new construction starts. The new construction starts include:

—2 environmental restoration projects;
—2 commercial navigation projects;
—4 flood damage reduction projects;
—1 shore protection of critical environmental resources;
—2 major rehabilitation projects, and
—1 deficiency correction.

HARBOR SERVICES FUND PROPOSAL

Like last year, a significant portion of the Civil Works budget is based on enactment of the proposed Harbor Services User Fee legislation that was transmitted to Congress. This new user fee would replace the Harbor Maintenance Tax (HMT), a portion of which was found unconstitutional. The HMT has also been the subject of questions raised by U.S. trading partners regarding claims that it violates the General Agreement on Tariffs and Trade. This fee would collect about the same total amount of revenue as would have been collected under the HMT prior to the Supreme Court's decision.

The new user fees would make up $950 million of the fiscal year 2001 Budget ($700 million for maintenance and $250 million for construction) and would enable commercial harbor and channel work to proceed on optimal schedules. I urge you to enact legislation to replace the Harbor Maintenance Tax with the Harbor Services User Fee.

HIGHLIGHTS OF THE FISCAL YEAR 2001 CONTINUING PROGRAM

The Army continues to be committed to the Civil Works missions of navigation and flood damage reduction. Other missions that contribute net economic benefits to the Nation are investments in hydropower, water supply, shore protection and recreation. In recent years, the Army's Civil Works responsibilities increasingly have expanded to include the restoration of the environment, with particular emphasis on restoring aquatic and wetland ecosystems.

Environmental programs make up about 18.2 percent of the fiscal year 2001 Army Civil Works budget, or more than $740 million. This includes $125 million for the Regulatory Program; $140 million for the Formerly Utilized Sites Remedial Action Program; $91 million for the Columbia River Fish Mitigation program in the Pacific Northwest; and $158 million to restore, preserve and protect the Everglades and South Florida ecosystem. Also included are $28 million to fund the environmental restoration continuing authorities programs.

General Investigations

The budget for the Civil Works study program is $138 million, $3 million more than last year's request. Overall, the level of funding we propose for the General Investigations account is consistent with our plan to stabilize the Civil Works budget in the future. There is a large amount of construction work waiting for funding—more than the funds we can reasonably expect in the future. The study program feeds this pipeline of construction work. This budget keeps project study funding at a lower level, in order to reduce the backlog of potential construction projects that are beyond our capacity to budget within a reasonable time frame. Once the backlog

of costly projects is worked down somewhat, then we expect to resume funding for studies at a higher level.

We believe that keeping study funding at this level is the right thing to do for our local sponsors, who expect timely construction of projects, once studies are completed and the projects are authorized.

We are also requesting a $6.6 million supplemental appropriation to conduct studies of an outlet for Devil's Lake, North Dakota, as well as $1.5 million to study the feasibility of a flood damage reduction project for Princeville, North Carolina.

Construction, General

The fiscal year 2001 budget for the Civil Works Construction, General program is $1.346 billion, of which $1.268 billion is for the continuing program. Of the total, $250 million would be derived from the proposed Harbor Services Fund, allowing port related projects to proceed at optimal rates. This will enhance the competitiveness of our Nation's ports and harbors.

Continuing construction of inland waterway, flood damage reduction and other projects is budgeted at a level that will, on average, result in completion of projects on about the same schedules as proposed in last year's budget.

South Florida Ecosystem Restoration.—The Everglades is an ecosystem of international importance. It is also one that has dramatically deteriorated since the turn of the 20th Century. It is very important that we aggressively restoring this treasure that is so important to the Nation. Construction funding for the projects that will restore the Everglades and South Florida ecosystem is $135 million. This amount includes $90 million for the Central and Southern Florida project to continue construction work at West Palm Beach Canal, South Dade County, and manatee pass-through gates, as well as planning, engineering and design work on the Comprehensive Restoration Plan, also known as the "Restudy"; $20 million to continue construction on the Kissimmee River Restoration project; and $20 million for critical restoration projects authorized under the Everglades and South Florida Ecosystem Restoration program. Of the overall amount for Everglades restoration, $5 million is included in the new investment program to initiate construction of the Hillsboro and Okeechobee Aquifer Storage and Recovery pilot project to demonstrate aquifer storage and recovery technology.

Columbia River Basin Fish Mitigation.—The budget includes $91 million for Corps construction activities associated with Columbia River Fish Mitigation at 8 Corps dams on the Columbia and Snake rivers and to continue the mitigation analysis which evaluates additional measures to increase fish survival at those dams. This includes $41 million for studies of surface bypass facilities, turbine passage, gas abatement, adult passage, spillway survival, and Lower Columbia configuration.

Continuing Authorities Program.—The budget includes $72 million for a full program of continuing and new work under the 9 activities in the Continuing Authorities Program. This amount includes $2.5 million for beach erosion control projects (Section 103), $9 million for emergency streambank and shoreline protection projects (Section 14), $25 million for flood damage reduction projects (Section 205), $0.3 million for navigation mitigation projects (Section 111), $7 million for navigation projects (Section 107), $0.2 million for snagging and clearing projects (Section 208), $10 million for aquatic ecosystem restoration (Section 206), $14 million for project modifications for improvement of the environment (Section 1135), and $4 million for beneficial uses of dredged material (Section 204).

Operation and Maintenance, General

The overall funding for the Operation and Maintenance, General, account is at a healthy level: $1.85 billion, $18 million more than last year's request and equal to the fiscal year 2000 appropriation. This demonstrates the Administration's commitment to maintaining the Corps' existing infrastructure, much of which is aging and requires greater upkeep. Of the $1.85 billion, $700 million would be derived from the Harbor Services Fund. In addition to these funds, operation and maintenance of hydropower facilities in the Pacific Northwest will be directly financed by a transfer of approximately $108 million from Bonneville Power Administration revenues, pursuant to an agreement signed three years ago.

We are also requesting a $19.2 million emergency supplemental appropriation for fiscal year 2000 for emergency dredging and repairs to Corps projects along the Atlantic seaboard that sustained hurricane damage.

Flood Control, Mississippi River and Tributaries (MR&T)

The Army is pleased that the fiscal year 2001 budget for the MR&T account is at the same level of funding as that provided by Congress for fiscal year 2000. Within the total, there are some differences in proposed allocation of these funds. The fiscal year 2001 budget emphasizes main stem Mississippi River flood protection in

the Atchafalaya River basin. No funding is provided to continue the Demonstration Erosion Control program. The Administration believes this program has fulfilled its purpose and should be discontinued. Any further streambank erosion control projects should be a local responsibility. Within the MR&T program, the allocation was reduced for work on those projects that primarily involve the drainage of wetlands to increase the production of surplus crops, particularly where lawsuits and continuing environmental studies have resulted in a hiatus on scheduled activities.

Regulatory Program

The Army Civil Works Regulatory Program is funded at $125 million to ensure that we continue to provide effective and equitable regulation of the Nation's wetlands. Through the Regulatory Program, the Army is committed to serving the public in a fair and reasonable manner while ensuring the protection of the aquatic environment, as required by laws and regulations. In fiscal year 1999, the Regulatory Program authorized over 90,000 activities in writing, the most in any year, and over 90 percent of all actions were authorized in less than 60 days. Under the President's budget, this level of service is maintained. Regional and nationwide general permits help streamline the regulatory process. By the end of fiscal year 2000, we will have established a full administrative appeals process that will allow the public to challenge permit decisions and jurisdiction determinations without costly, time-consuming litigation.

Under the Regulatory Program, we are also active in the preparation of Special Area Management Plans (SAMPs) to address development in environmentally sensitive areas. In particular, the Corps has been asked to chair a task force to work with the Environmental Protection Agency and Riverside County, California in the development, funding, and implementation of a SAMP for the Santa Margarita and San Jacinto watersheds.

Again this year, we are proposing to undertake a revision to the Regulatory User Fee, which has not changed since 1977. We ask the Subcommittee's support for this effort.

Formerly Utilized Sites Remedial Action Program (FUSRAP)

FUSRAP is an environmental cleanup program that was transferred by Congress from the Department of Energy to the Army in fiscal year 1998. We are continuing the implementation of needed clean-up of contaminated sites. This year's budget includes $140 million in new appropriations for this program. This amount will be supplemented by approximately $10 million from a Potentially Responsible Party settlement reached at one site.

Flood control and Coastal Emergencies (FCCE)

No new funding is requested for the FCCE program for fiscal year 2001. Sufficient carry over funding remains from prior year appropriations to finance the normal costs of emergency planning and preparation.

CONCLUSION

In summary, the President's fiscal year 2001 budget for the Army Civil Works program is a good one. It demonstrates commitment to Civil Works with a strong program of new construction; a plan to solve the constitutional problem with the existing Harbor Maintenance Tax; maintenance of existing infrastructure; continuing support for historical Civil Works missions; and increased reliance on the Army Corps of Engineers' environmental restoration expertise. Thank you.

TABLE A—DEPARTMENT OF THE ARMY CORPS OF ENGINEERS CIVIL WORKS FISCAL YEAR 2001 DIRECT PROGRAM PRESIDENT'S PROGRAM FUNDING

[In thousands of dollars]

Program	Fund											
	Special				Trust			General		Transfer Bnnvll Power Administrtn	Trust Rivers and harbors cntrbtns	Total
	Harbor services [1]	Permanent apprprtns	Permit applctn fees [2]	Rcrtn user fees	Coastal wetlands rstrtn [3]	Inland waterway	Sd trrstrl wldlf hbtt rstrtn	Ultimate [4]	Initial [5]			
COMBINED (discretionary and mandatory):												
DEFENSE: Formerly Utilized Sites Remedial Action Program								140,000	140,000			140,000
DOMESTIC:												
General Investigations								137,700	137,700		44,000	181,700
Construction, General	250,000					74,000		1,022,000	1,346,000		153,000	1,499,000
Operation and Maintenance, General	700,000			35,700				1,118,300	1,854,000	108,000	8,000	1,970,000
Flood Control, Mississippi River and Tributaries Project								309,000	309,000		45,000	354,000
Regulatory Program								125,000	125,000			125,000
General Expenses								152,000	152,000			152,000
Flood Control and Coastal Emergencies												
Revolving Fund												
Permanent Appropriations		16,000										16,000
Coastal Wetlands Restoration					55,000						9,000	11,000
South Dakota Terrestrial Wildlife Habitat Restoration							10,000					10,000
ALL	950,000	16,000		35,700	55,000	74,000	10,000	3,004,000	4,063,700	108,000	251,000	4,458,700
DISCRETIONARY								3,004,000	3,004,000			3,004,000
MANDATORY	950,000	16,000		35,700	55,000	74,000	10,000		1,069,700	108,000	251,000	1,454,700

[1] Proposed special fund to replace Harbor Maintenance Trust Fund.
[2] Proposed fees for processing permit applications, to be paid to General Fund receipt account, not available to Corps.
[3] Total for interagency task force; Corps' piece is reflected under "Total."
[4] Net direct Congressional appropriation after reimbursement from mandatory "Special" and "Trust" funds, as applicable.
[5] Direct Congressional appropriation. The total for all accounts comes from the General Fund, initially. Ultimately, it is reimbursed from mandatory accounts in the amount shown opposite "Mandatory."

STATEMENT OF JOE N. BALLARD

Senator DOMENICI. Thank you, very much, Mr. Secretary. General Ballard, we welcome your testimony. Your written remarks will be made a part of the record as you read them. Proceed as you see fit.

General BALLARD. Thank you, Mr. Chairman, Senator Byrd. I'm honored to testify on the President's fiscal year 2001 budget for the Civil Works Program.

Senator DOMENICI. Just one moment. Senator Burns, did you want to make any remarks.

Senator BURNS. I think we ought to complete the statements and I'll submit my points I want to make. I think we should hear their testimony. Thank you very much.

Senator DOMENICI. Please proceed, General.

General BALLARD. Mr. Chairman, I'm honored to testify on the President's fiscal year 2001 budget for the Civil Works program. As you noted, this is my last appearance before you as the Chief of Engineers and I very much appreciate your very kind remarks.

Leading the Corps has been an inspirational experience as well as a rewarding personal and professional challenge. I take great pride in the results of our work with this Committee to ensure the Civil Works program remains strong, balanced, responsive and highly productive. Until my watch is over, however, I will continue to work with you to that end and I look forward to your continued partnership in this great program. My complete statement will cover three topics: the summary of the Civil Works program budget, reducing the Corps maintenance backlog, and I'll have some comments on meeting the Nation's water and related land resources management needs. And with your permission, I will submit this statement for the record.

I would like to talk to you today about some significant challenges in water resource management and I will also address the recent media coverage on the Corps' work.

MEETING THE NATION'S WATER AND LAND RESOURCE NEEDS

First, a few words about the challenge of meeting the Nation's water and related land resource management needs. Public concerns about water resource investments continually change and, as a result, national needs and priorities must also be continually reevaluated to ensure that we provide the best possible service to the Nation. And we're examining national needs and priorities for water and land resource solutions.

But based on our current assessment, we have identified five significant challenges that are currently facing the Nation. And these are navigation, which deals with the capacity, the efficiency, and the volumes needed in the national marine transportation system; flood protection, dealing with continued development of flood plains and coastal planes and coastline erosions; environmental management, dealing with restoration of habitat, especially protection of wetlands; wetland—I mean, infrastructure renovation, which is maintaining the Nation's water management infrastructure, including recreation facilities and the effects of global climate change; and disaster response assistance, dealing with increased severity and frequency of national disasters.

We must meet these challenges in order to preserve and promote our future national welfare. And to that end, I believe that we need to carefully evaluate our level of investment in water resource management. We need to invest in improving our water resource infrastructure, many parts which have outlasted their 50-year design lives.

Now, this comes at a time when national need for their continued benefits are growing and we need to meet new challenges for water resource management brought about by increasing trade, population and population shifts and environmental values. We need to invest, in addition to our water resource infrastructure, to the extent that improving existing infrastructure will not meet national needs. We also need to better manage existing infrastructure, where to invest and how to decide which facilities have outlived their usefulness.

MEDIA COVERAGE OF THE CORPS

Now, to address very quickly some recent media coverage of the Corps. First, the allegation that I or members of my command are trying to grow the Corps with respect to the number of employees is absolutely ludicrous. For one thing, the Civil Works Program work force is only 24,000 strong, not 37,000 as implied by the media.

More importantly, over the past 4 years, we have reduced the size of the organization by nearly 10 percent while streamlining and improving our business processes. We have pursued our mission to address the Nation's growing water resource management needs in an environment of deliberate downsizing. The Nation's work load for our mission is certainly growing, but we are not.

Next, there are allegations of wrong-doing in the Upper Mississippi and the Illinois Navigation Studies. These allegations are very troubling to me, as they challenge the fundamental value of the Corps of Engineers to the Nation. The foundation for that value is trust in our absolute integrity to provide the Administration and the Congress with water resource investment recommendations that are unbiased and technically sound.

Now, while the widely published allegations and the media reports attempt to erode that foundation, I know beyond a doubt that your trust has not been misplaced. I, therefore, welcome and will fully support all independent outside investigations of the allegations and any review of our processes. I will take prompt corrective action if wrongdoing is discovered and will make improvement in our processes, if warranted.

However, I assure you that when all the facts are in, you will see that there is no need to do either and that your traditional trust in the Corps remains as always, very well-founded.

Now, let me explain the reasons for my confidence. First of all, I believe in the professionalism and dedication of the Corps team and have great trust in my leaders. Additionally, our planning processes provide for multiple reviews to ensure objectivity. And these include independent technical reviews, a minimum of two formal public reviews, Washington-level policy review, State and agency coordination requirements and, finally, the review by the Executive Branch under Executive Order 12322.

Notably, for the study in question, the draft report has not yet been completed, much less undergone these reviews. As a rule, there are no easy, clear-cut answers to the complex issues we face in water resource management.

Technical experts often disagree on specifics. Nevertheless, our planning process ensures that all sides of any technical disagreement are competently analyzed and subjected to proper peer, public and policy reviews. And ultimately, after full and open debate, balanced professional judgment must enter the process.

And dealing with technical disagreement is the role of our field commanders. They must make tough decisions on whether to recommend investments in a project, often in the face of strongly held opposing views. Our processes ensure that all interests are heard and that final recommendations are unbiased, based on the best science available and in the public interest.

In our business, invariably there is an interest group that is opposed to some aspect of our work. However, the accommodation and fairness of the Corps' planning process delivers recommendations that address the national interest based on sound engineering judgment. And for these reasons, I'm sure you will find the integrity of our process and of the leaders who guide it to be indisputable.

UPPER MISSISSIPPI RIVER NAVIGATION STUDY

Now, let me take a few minutes to report on the status of activity related to the Upper Mississippi River Navigation Study. There have been two significant intentional reviews.

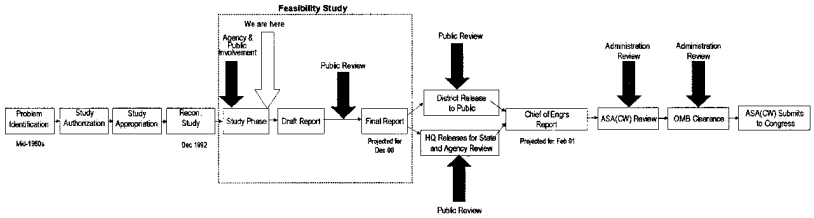
Senator DOMENICI. General, do you have the project development flow chart?

General BALLARD. I have the chart, sir.

Senator DOMENICI. Do you have it over here? Why don't you put it up. This is the project development process, right?

[The chart follows:]

Civil Works Project Development Process
(Upper Mississippi Navigation Study)



General BALLARD. That is the process, Senator.

Senator BURNS. Let the rest of us see it.

Senator DOMENICI. You all don't mind in the audience if we look at it, do you? There you go.

General BALLARD. Bring it closer and I'll just talk off of it. I'll just deviate just for a second from my statement so I can explain this chart to everyone.

Inside of the box there, is where we are with this study. We're in the feasibility portion of it. The large white arrow points out that we're in the study phase. What is important here is that we have not really had the appropriate oversight reviews that normally accrue to the public. And I'm talking about the public review process, the agency coordination or anything of that nature.

We're in the preliminary stage. We are scheduled to submit—to complete a draft of this study in December of this year. The bottom line is, we're just starting this process. The dialogue is just beginning. So the comments that we have received from the media regarding "cooking the books" and all the other things that you read is definitely premature. We're not there yet.

Senator DOMENICI. General, you meant by your statement that—you didn't mean that we have not done the public input. You meant that the time has not yet arrived according to the process and it's still to be done?

General BALLARD. The public comment, once we address the report, is still to be done. Thank you, sir, for correcting me. We have received public input to this process.

Senator DOMENICI. But there will be a chance for more, won't there?

General BALLARD. Yes, sir.

Senator DOMENICI. If people are wondering what you're doing——

General BALLARD. We will have a chance to submit this for agency review, we will have at least two more opportunities for public comment as we move to point those out. After the draft report is out, that next dark black arrow there, we will have a period of public review. We're scheduled to have the final report out by December of this year. And after that, we will release it again to the pub-

lic one more time and we will release it to State and agency reviews.

Senator DOMENICI. One more time.

General BALLARD. Yes, one more time. And we are projected to have a final Chief's Report by February 2001. Then it goes from me to the ASACW office for Administration review. And then finally to OMB for clearance and review before it is submitted to the Congress. So as you can see, if I can quickly count that, after we address, there are one, two, three, four, five more opportunities for public review and input by others.

Senator DOMENICI. We're going to make this one part of the record. We can't put that one in.

ALLEGATIONS FOR WRONGDOING

General BALLARD. Yes, sir. In addition to the clarification on the review process, there have been some allegations of wrongdoing by some of our employees and I've directed an internal investigation according to my authority to take a look at that. The investigation is complete and I can submit that for the record if you desire. And we found no misconduct.

There are several external investigations and reviews that are in process. The Office of Special Counsel [OSC] requested that the Secretary of Defense investigate the allegation and report the finding back to OSC. This investigation is being done by the Army Inspector General and we are providing information requested by the Army Inspector General in support of his investigations and we're scheduled to meet with him and provide some additional answers.

In addition, the Survey and Investigations staff of the House Committee on Appropriations has begun its investigation. We have met with the staff, provided information and documents requested, and we remain committed to fully supporting it throughout the investigation.

Finally, the Secretary of the Army has directed that an independent assessment be made of the economics of the study. The bottom line is, sir, I'm convinced that the findings of these investigations will confirm that our planning process and execution of that process are fundamentally sound.

In conclusion, we need to invest in water resource management infrastructure to meet the challenges based on national needs. And through a deliberate streamlining and improvement of our business processes and downsizing of our work force, we continue to maximize actual and potential values of our organization to the Civil Works program, to the Army, and to the Nation.

And finally, we are pursuing this mission with the utmost professionalism and integrity. And I'm confident that our planning process and the judgment of our leaders are sound and will yield balanced recommendations for wise water resource investments.

PREPARED STATEMENT

Thank you very much, Mr. Chairman, and members of the Committee. This concludes my statement.

[The statement follows:]

PREPARED STATEMENT OF LT. GENERAL JOE N. BALLARD

Mr. Chairman and members of the subcommittee: I am honored to be testifying on the President's fiscal year 2001 (fiscal year 2001) Budget for the Civil Works Program. This is my last of four appearances before you as Chief of Engineers. Leading the Corps has been an inspirational and rewarding challenge for me personally and professionally. I take great pride in results of our work together to ensure that the Civil Works Program remains strong, balanced, responsive, and highly productive. Until my watch is over, I will continue to work with you to that end, and look forward to your continued partnership in this fine program, so broadly beneficial to our nation.

In this, my final statement, I will depart from the usual practice of presenting details on such things as the budget, program execution, organizational restructuring, and improvement of business systems and operations, to focus on significant challenges for the nation in water and related land resources management, which I feel the Corps is eminently qualified to address. I will say just a few words about the budget and reducing the Corps' maintenance backlog, then devote the balance of my testimony to an assessment of national water and related land resources management needs. Accordingly, my statement covers just these three topics: Summary of the Civil Works Program Budget; Reducing the Corps' Maintenance Backlog; and Meeting the Nation's Water and Related Land Resources Management Needs.

SUMMARY OF CIVIL WORKS PROGRAM BUDGET

This is a good budget. New funding for the Civil Works Program, including the Direct and Reimbursed programs, is expected to approach $5.20 billion.

Direct Program funding, including discretionary and mandatory amounts appropriated directly to the Corps, totals $4.46 billion. Discretionary amounts total $4.06 billion; mandatory amounts total $395 million.

Reimbursed Program funding is projected to be $700 million.

DIRECT PROGRAM

The proposed budget reflects the Administration's commitment to continued sound development and management of the nation's water and related land resources. It provides for continued efficient operation of the nation's navigation, flood protection, and other water resource management infrastructure, fair regulation of the nation's wetlands, and restoration of the nation's important environmental resources, such as the Florida Everglades. It is supported by a proposal to establish a Harbor Services User Fee (HSUF) and Harbor Services Fund (HSF) to fund the federal share of construction as well as operation and maintenance cost of our harbors and ports. Lastly, it is consistent with the President's overall domestic priorities and continued commitment to a balanced budget.

The budget provides for continued funding of nearly all studies and projects underway, including many started in fiscal year 2000. It also provides for funding of new starts under the General Investigations (GI) and Construction, General (CG), programs.

REIMBURSED PROGRAM

Through the Interagency and Intergovernmental Support Program we help non-DOD federal agencies, States, and other countries with timely, cost-effective implementation of their programs, while maintaining and enhancing capabilities for execution of our Civil and Military Program missions. These customers rely on our extensive capabilities, experience, and successful track record. The work is principally technical oversight and management of engineering, environmental, and construction contracts performed by private sector firms, and is fully funded by the customers.

Currently, we provide reimbursable support for about 60 other federal agencies and several State and local governments. Total reimbursement for such work in fiscal year 2001 is projected to be $700 million. The largest share—nearly $270 million—is expected from the Environmental Protection Agency (EPA) for cleanup of wastes at numerous sites under its Superfund program. 90 percent of Reimbursed Program funding is provided by other federal agencies.

REDUCING CORPS' MAINTENANCE BACKLOG

Our fiscal year 2001 budget request for $1.854 billion matches the amount appropriated for fiscal year 2000. In the short term, despite level funding, we will be able to sustain customer services. However, in the long term, given the vast and aging infrastructure needing attention and care, this becomes increasingly difficult. As

stewards of a diverse and widespread complex of water and related land resources management facilities, the Corps must do its best to preserve the nation's investment and ensure the continued flow of intended benefits. Toward that end, I have recently completed a comprehensive review of the O&M program, as explained below.

Over the past year, I conducted an in-depth review of the O&M program. I spent a full day with each of my eight division commanders, along with their district commanders, covering every aspect of the O&M program. My purpose was to instill heightened interest in making this program as efficient and effective as possible, and to ensure that my commanders are fully engaged to that end. As a result, we are pursuing improvements throughout the program. For example, we are reviewing our inventory of property and equipment to determine the minimum required for mission accomplishment. We have compiled a list of over 300 examples of cost-saving measures, resulting in $124 million in annual savings and $24 million in one-time savings. These examples have been publicized throughout the Corps, so that everyone might apply them to his/her own situation. Division and district commanders are continually reviewing their programs to determine best business practices to be employed in responding to the ever-changing marketplace.

Improving the O&M program is not a one-time effort. It is a continuing commitment that will challenge the entire organization. Everyone involved in the O&M program will be looking for better ways to provide public services and products at least cost. The Corps' dedicated workforce takes pride in carrying out its stewardship responsibilities. It is up to this challenge and will continue to do its best.

Notwithstanding these efforts, we still face a growing O&M backlog. We are making a concerted effort to identify the highest priority backlog and concentrate available resources on addressing the most critical needs. Improved program execution is helping. In fiscal year 1999, we succeeded in reducing the unexpended carryover by $110 million, and applied a good portion of this toward the backlog. Nevertheless, we now estimate that required funding for our highest priority backlog will be about $450 million in fiscal year 2001—up from $329 million in fiscal year 2000. I will continue to do all I can to make the O&M program as efficient as possible, and look forward to continued support of this committee in our endeavor to reverse the O&M backlog growth.

MEETING NATION'S WATER AND RELATED LAND RESOURCES MANAGEMENT NEEDS

CORPS' HISTORIC ROLE IN SERVICE TO THE NATION

The Army Corps of Engineers began its distinguished public service in the New England Provincial Army, before our nation existed, with construction of fortifications for the Battle of Bunker Hill in 1775. Since then, for more than 225 years, the Corps has responded ably to the Army's and nation's needs.

Throughout this period, the mission of the Corps has evolved from military only to both civil and military. What began as a military mission in birth of the nation in the 18th century grew into civil and military missions of building and preserving the nation in the 19th century. We mapped the frontier and laid out roads, canals, and railroads for westward expansion. We aided national commerce through development of a vast navigation system of coastal and inland channels, ports, and harbors. We initiated development of the first national parks. We built many public buildings of the nation's capital, including the Capitol. We also assisted in preserving the Union. In the 20th century, we built the daunting Panama Canal, after others had failed. More importantly, based on our performance over the years, the Administration and Congress expanded both the civil and military missions dramatically.

Civil Works project purposes included flood, hurricane, and shore erosion protection; water and related land environmental management; hydropower generation; water-based recreation; municipal and industrial water supply; irrigation; hazardous and toxic waste cleanup; and technical support for other federal agencies, States, and other nations. As a result of these and earlier duties, our water and related land management infrastructure has grown to include over 400 multi-purpose reservoirs, 12,000 miles of navigation channels, hundreds of ports and harbors, and 11.6 million acres of land.

As our national needs and priorities have changed, the Corps has been at the leading edge to meet them.

We have increasingly focused on developing and honing our project management expertise. Concurrently, we have contracted with private sector architectural, engineering, and construction firms to accomplish our work, until, now, much of our design and all of our construction are done by such firms. Contracting gives us ready access to a force much larger than our own to accomplish our mission, resulting in

the so-called force multiplication effect. Given that we can leverage civil program assets in support of our military mission, this effect, already available to our military program, can be doubled for execution of our military mission. For example, during the Persian Gulf War, we employed readily available force-multiplied assets from the civil program to assist U.S. forces. This enhanced our nation's readiness, responsiveness, effectiveness, and efficiency in the "mother of all battles," won by the allies in 100 hours, and remains a powerful strength for future service to the Army, federal government, our nation, and other nations.

Always, we have striven to stay at the leading edge in service to the Army, federal government, and our nation.

Success in meeting our challenge depends principally upon our business operations. In recognition of this, we have improved our business processes for more responsive, expeditious, and productive performance. Additionally, we have improved partnerships with project sponsors and partnering with all stakeholders in project execution. These improvements are the foundation of our recently fielded project management business process, providing an orderly, logical, and reasoned approach to managing projects to meet the nation's water and related land resource management needs. Finally, we remain vigilant for and eager to explore other improvement opportunities.

To facilitate improved business operations, we have restructured our organization at all levels to provide for more pertinent, flexible, and timely operations resourcing. Concurrently, we have tailored our resources to workload and eliminated surpluses, downsizing our workforce by over 16 percent since 1993. In addition to promoting improved operations, this has reduced our cost of doing business. Our goal has been, and remains, to stay fit for and in step with our nation's future.

As we enter the 21st century, we envision that the Corps will continue in its long-standing and exemplary leadership role as the nation's problem solver.

CURRENT CIVIL PROGRAM MISSION

The goal of our Civil Program is to contribute to the welfare of our nation by providing, in partnership with customers, desired goods and services of highest quality, designed to be economic, technically sound, and environmentally sustainable. We do this through:

—formulation, development, and operation of facilities and practices for management of the nation's water and related land resources (including protection, restoration, and management of environment resources);

—administration of water resources management programs (including resource use regulation, hazardous waste cleanup, and assistance with natural disaster response and recovery); and

—engineering and technical services for other federal agencies and States.

The Civil Program is prosecuted through subordinate programs established expressly for accomplishment of distinct phases of work, such as investigation, construction, and operation and maintenance. These programs are designed to address needs of all purposes thoroughly, fairly, and timely. They are executed by a talented team of multidisciplinary staff specialists and private sector contractors. This team develops comprehensive perspectives across technical, socioeconomic, cultural, political, geographic, and environmental boundaries, in examination and recommendation of solutions to problems in all phases of our work.

We address all relevant purposes within appropriate "frameworks" in a multiojective trade-off process, ensuring optimum multipurpose solutions. The frameworks include regions, watersheds, coastal zones, and ecosystems. Our many partners participate in this process. They include customers; other stakeholders such as local, State, and federal agencies; and the general public. As a result, competing goals of many interests are balanced without bias to satisfy needs and desires of multiple constituencies for a wide variety of water and related land resource management goods and services that contribute directly to the national welfare.

In light of the broad responsibility entrusted to us by the Administration and Congress for national water and related land resources management the breadth and depth of our experience in executing that responsibility, and national needs for water and related land resources management as we enter the new century, we feel obliged to present the following assessment.

NATIONAL TRENDS

Throughout its history, our Civil Works Program has been affected by external forces. The most important of these have been, and continue to be, customer demands for goods and services and taxpayer concern that investment in such goods and services be advisable. Our customers include direct beneficiaries of our projects,

most of whom are cost-sharing partners. Taxpayers include the general public and taxpayer advocates. For our program to remain a relevant and viable contributor to national welfare, we must remain sensitive to these forces, continually reorienting, rescoping, and refocusing the program in light of them.

As customer demands for, and taxpayer concerns about, water and related land resources management investment continually change, so, too, do national needs and priorities for such management. In light of this, in the coming months we intend to hold public listening sessions around the country with our customers, other partners, and concerned taxpayers to refine current national needs and priorities for water and related land resources management. These sessions will provide a forum for a national dialogue intended to produce more widespread discussion of needs and priorities, choices, constraints, tradeoffs, impacts, and challenges facing the nation and the implications they have for our national welfare.

Meanwhile, our current assessments of current trends follow.

Current Assessments

As the world's climate changes, changing hydrology and water distribution and, in turn, environmental and socioeconomic conditions, necessary changes in and additions to the nation's water and related land resources management facilities, systems, and practices must be anticipated and effected as opportunely as feasible.

As global markets expand, international commerce will demand more efficient domestic ports and harbors and improved vessel and intermodal cargo handling facilities.

With many properties and major populations located in the nation's floodplains, flooding will continue to threaten national welfare. Moreover, as pressures continue to develop flood-prone lands and natural flood management systems are compromised, the threat of flood damage will increase.

Ongoing migration of the nation's population to coastal plains and coasts, and attendant property development, will increase risks of loss from coastal erosion, floods, and hurricanes.

The ongoing migration to coastal plains and coasts will put increasing pressure on coastal habitat, especially wetlands, and other fish and wildlife ecosystems.

Through Water Resources Development Acts of 1996 and 1999 (WRDA 96 and WRDA 99), the American public placed national environmental health near the forefront of social priorities. These acts, providing additional authorities to the Corps for ecosystem and watershed protection and restoration, increase emphasis on national need such as for ecosystem restoration, wetlands management, and nonstructural floodplain management.

As the nation's population grows, there will be growing conflicts among multiple interests within watersheds wanting to use available water for diverse needs.

As the nation's water and related land management infrastructure ages, it must be rehabilitated, modified, replaced, or removed.

Given the American public's strong and growing interest in downsizing the federal government and, in turn, its workforce, ongoing outsourcing and privatizing for accomplishment of government work, including engineering, will increase. Also, the nonfederal sector will have to take on more water resources responsibilities.

Current Challenges

In light of our current assessments of trends in the nation's water and related land resources management, we have identified 5 significant challenges currently facing the nation. These are:

—Navigation—dealing with capacity and efficiency needs;
—Flood Protection—dealing with existing and continued development of floodplains, including coastal plains and coasts, and increased demand for protection from flooding, erosion, and winds;
—Environmental Management—dealing with restoration of habitat, especially protection of wetlands;
—Infrastructure Renovation—maintaining the nation's water and related land management infrastructure and effects of global climate change; and
—Disaster Response Assistance—dealing with increasing severity and frequency of natural disasters.

We must meet these challenges in order to preserve and promote our future national welfare. In cases that other federal agencies have authorities to address them, we promote interagency alliances and partnerships. Each challenge is discussed next.

NAVIGATION

The National Marine Transportation System (NMTS) comprises approximately 1,000 harbor channels; 25,000 miles of inland, intracoastal, and coastal waterways; and 238 locks. This system serves over 300 ports with more than 3,700 terminals for cargo and passenger movement, and connects to 152,000 miles of rail, 460,00 miles of pipelines, and 45,000 miles of interstate highways.

The system annually provides enormous national benefits:

—creating employment for more than 13 million citizens and contributing about 8 percent of national Gross Domestic Product (GDP);
—moving more than 2 billion tons of domestic and international freight having a value of approximately $1.01 trillion;
—moving over 60 percent of the nation's grain exports;
—importing 3.3 billion barrels of oil to meet national energy demands;
—providing 3–20 times less pollution per ton of cargo moved, as well as reduced accident risk compared with alternate transportation modes;
—supporting 110,000 commercial fishing vessels and recreational fishing together contributing $111 billion to State economies;
—transporting 134 million passengers by ferry;
—serving 78 million Americans engaged in recreational boating; and
—hosting more than 5 million cruise ship passengers.

However, the system is nearing capacity, while demands on it will grow substantially. The Corps estimates that total volume of domestic and international marine trade is expected to more-than-double in the next twenty years to more than 4 billion tons per year by 2020. We project that inland shipments will increase over that same period by 200 million tons, to 830 million tons. This increase in shipment volume will severely stress the NMTS.

International trade and competition are key factors in our economic growth and impacting foreign relations. Currently, 20 percent of our GDP and nearly that much of our employment are associated with international trade.

Increasingly, the containerships of choice are mega-vessels with 50–55 foot drafts. Few of our ports have sufficient depths for this, but key international ports do, including those of Halifax, Freeport, and Vancouver. These ports are able competitors for our international trade. A major hurdle in meeting demand for deeper channels required by mega-vessels will be in meeting dredging requirements themselves. Over the past 10 years an average of 275 million cubic yards of spoil has been dredged for deep-draft channels. With deeper and wider channels greater spoil quantities will be produced, stressing both the physical capacity of our dredge fleet, and our ability to dispose of the spoil economically and in an environmentally acceptable way.

Also, unfortunately, more than 44 percent of our inland waterway locks and dams are at least 50 years old. Many locks are undersized for modern commercial barge movements. Yet, they are carrying beyond their original designs, and according to the Corps' calculations, will be asked to carry 30 percent more by 2020. Annual lock delays associated with aged facilities currently total over 550,000 hours, representing an estimated $385 million in increased operating costs borne by shippers, carriers, and ultimately consumers.

Among the 36 locks with high average delays in 1998, 19 are on the Upper Mississippi River—Illinois Waterway system, 5 are on the Gulf Intracoastal Waterway (GIWW) or its connecting channels, and 12 are on the Ohio River system. Since the passage of WRDA 86, with $1.7 billion has been invested in 14 locks to date, and an additional $3.4 billion is programmed for ongoing construction at an additional 13 locks. Adequate and timely investments are needed to address the need for an efficient inland waterway system.

There is much that the federal government can do to ensure that our NMTS will continue to make positive contributions to our national prosperity and global competitiveness.

FLOOD PROTECTION

Flooding is the most destructive and costly natural disaster in our nation, accounting for 85 percent of all natural disasters that occur annually. We have made a major investment in flood protection infrastructure, including, for the Corps only, nearly 400 major reservoirs and 8,500 miles of levees and dikes, as well as hundreds of smaller local flood protection improvements. We estimate that, since 1950, the Corps' infrastructure has prevented nearly $500 billion in riverine and coastal flood damage, returning nearly $6.00 in flood protection benefit for every $1.00 invested, and preventing, on average, $16 billion in flood damages annually.

Despite its considerable success in flood protection, the nation still has an extensive residual flood damage problem. Costs of floods (emergency assistance costs plus property losses) still average over $4 billion annually. News coverage of recent flood disasters, including the 1993 Mississippi River Flood and the 1997 catastrophe in Grand Forks, North Dakota, have shown, graphically, the enormous economic costs of flooding. Unquantifiable social costs include, in addition to injury and loss of life, stress on individuals and families caused by disruption, evacuation, and life in temporary quarters. It also includes trauma caused by injury and death, loss of irreplaceable property, and destruction of homes, neighborhoods, and entire communities.

Major reasons for the nation's continuing flood damage problem include extensive and growing unprotected development in "100-year" floodplains along the nation's streams, rivers, and shorelines, as well as development just outside 100-year floodplains where use regulations do not apply, but risk of less frequent more damaging floods exists.

Urban development in floodplains is increasing by 1.5–2.5 percent annually. In addition, the nation's population is migrating to coastal plains. Presently, more than 36 million people live in coastal areas subject to flooding, hurricanes, and shore erosion. Along the East and Gulf coasts, about $3 trillion in infrastructure is located along shores vulnerable to erosion from flooding and other natural hazards. During the 20th century, 23 hurricanes caused economic damages in excess of $1 billion, each, in today's dollars. Most recently, Floyd, a category 4 hurricane that ravaged the East Coast in September, 1999, caused loss of 75 lives and economic damages estimated at $6 billion. Populations of the coastal states of California, Florida, and Texas are each expected to grow by more than 36 percent over the next 25 years. In recent years, these states have sustained the greatest amount of total flood damages.

The nation needs to develop policies to address floods, erosion, and hurricanes, and the social, economic, and environmental bases associated with them.

ENVIRONMENTAL MANAGEMENT

Protection and restoration of the environment is an important goal. Indeed, restoration of native ecosystems and, possibly, creation of new ones, is crucial to sustaining natural systems and habitats for future generations. Our nation has more than 3.6 million miles of rivers and streams that, along with floodplains and upland areas, comprise corridors of great economic, social, and environmental value. These corridors are complex ecosystems that perform vital environmental functions, including modulating streamflows, storing water, removing harmful materials from water, and providing habitat for aquatic and terrestrial plants and animals. Until passage of the National Environmental Policy Act (NEPA) in 1970, however, development of these corridors proceeded without concern, resulting in degradation of water quality, decreased water conveyance and storage capacity, loss of habitat for fish and wildlife, and decreased recreational and aesthetic values. NEPA prescribed integration of environmental protection and social goals with economic ones in the development of water and related land resource management projects. However, despite the shift in emphasis toward environmental benefits in such projects, much work remains to be done. The environment has suffered heavily. In order that it might sustain future generations, it must be cleaned up and restored, and further development must be tempered by an ethic of ensuring environmental sustainability of any such development.

Over the years, human activities have significantly stressed aquatic environments across the nation and contributed to detrimental changes in their dynamic equilibria. Environmentally stressing activities have included physically changing habitats, including converting them to something else; over-enriching waters with oxygen-demanding nutrients; contaminating waters with bacteria; polluting lands and waters with chemicals; elevating the temperature of waters with oxygen-depleting heat; and spilling oil in oceans. For example, dredging of the nation's ports and harbors for cargo vessels, and disposal of the spoil, much of which is contaminated sediment, has adversely impacted coastal ecosystems. Bigger ships on the horizon will require deeper ports, more dredging, and more places to dispose of spoil. Such sites are quickly filling.

Within the contiguous United States, over 100 million acres (53 percent) of wetlands—an area the size of California—have been lost since colonial times, primarily from farming and urban development. Coastal areas have been particularly hard hit, although the rate of loss there has slowed since the 1980s. In addition to serving as habitats and spawning grounds for fish, waterfowl, and mammals, wetlands help reduce flood damage, protect shorelines from erosion, and improve water qual-

ity. About 35 percent of all federally listed rare and endangered species either live in or depend upon wetlands. The reduction in wetlands has allowed flooding to affect habitats and species populations adversely. The American Fisheries Society lists 364 species or subspecies of fish as threatened, endangered, or of special concern, or at risk of habitat destruction. In all, about 600 species have been lost or endangered. Diminished flows to river deltas and estuaries from dams dry up wetlands, deteriorate water quality, reduce crucial habitat, and reduce fisheries.

On average, coastal areas are twice as productive (ecologically) as inland areas. Coastal oceans and estuaries, among the most productive and valuable of natural systems, are also among the most threatened by human development. Over half of our population lives within 50 miles of a coastline, in areas collectively representing only 11 percent of the nation's total land area. This population concentration puts a great strain on many local ecosystems and coastal environments, leaving them more vulnerable to damage from coastal storms and chronic erosion.

The nation needs a healthy environment, capable of sustaining its development for socioeconomic purposes, for current and future generations. Potential for restoring beneficial conditions of our nation's environment, focusing on floodplains including rivers, streams, wetlands, and coastal areas, and protecting them from further damage, is boundless.

INFRASTRUCTURE RENOVATION

Water resources management infrastructure has improved the quality of our citizens' lives and provided a foundation for the economic growth and development of this country. Our systems for navigation, flood protection, hydropower generation, and recreation management all contribute to our national welfare. The stream of benefits is realized as reduced transportation costs, avoided flood damages, electricity, and recreation services. For example:

—Navigable channels provide an efficient and economic corridor for moving a staggering 2.3 billion tons of the nation's domestic and foreign commerce.
—For every $1 invested to improve navigation infrastructure, our GDP rises more than $3.
—Flood protection, on average, prevents $16 billion in damages per year, saving $6 for every $1 spent.
—Thousands of cities, towns and industries benefit from the 9.5 million acre-feet of water supply storage from 116 of our lakes and reservoirs.
—Hydroelectric power dams produce enough electricity to supply 4.64 million homes with power.
—Coastal projects protect 426 miles of the nation's shoreline.
—Over 30 percent of the recreation and tourism occurring on federal lands takes place on Corps water and related land resources management facilities.

Quality of American urban and rural life is enhanced by the availability of high-quality recreational opportunities for users of all economic means. Recreational opportunities abound near reservoirs and other places where boating, swimming, and fishing otherwise might not be available. More than 180 million Americans visited ocean and bay beaches in 1993. It is estimated that coastal recreation and tourism generate $8 to $12 billion annually. In 1996, an estimated 77.7 million recreational boaters spent approximately $17.8 billion on products and services related to recreational boating, while recreational fishing contributed another $13.5 billion to the economy. Growing population will place a greater demand on performance of the national water and related land management infrastructure used for recreation.

Investment in economically justified and environmentally sound maintenance, major rehabilitation, and new infrastructure is needed to maintain and improve our capital water and related land resources management stock, and, in turn, benefits received from it.

DISASTER RESPONSE ASSISTANCE

In recent years, our nation has suffered a series of major disasters whose impacts have been measured officially in terms of lives lost and high costs of damage to property and relocations. In addition, impacts have included disruption of family life; loss of jobs; business failures; disruption of safe water, sanitation, food, and shelter, and transportation; chaos in communities for weeks; changing of lives forever; public health risks due to diminished capability of public health care systems; loss of income and tax revenues; and impacts on other government programs from diversion of tax dollars to disaster response, relief, and recovery.

The Federal Emergency Management Agency reports that 25 major disasters occurred between 1988–1997 totaling $140 billion in damages. In the past 10 years, the nation has experienced the Loma Prieta and Northridge earthquakes in Cali-

fornia; record flooding in the Midwest, California, and other regions; and hurricanes Andrew, Inicki, Marilyn, Fran, and Georges, among others. The Atlantic region alone saw 65 tropical storms during the period 1995–1999, of which 20 were Category 3–5 major hurricanes.

The cost of disasters runs high. The National Science and Technology Council estimates that the structural losses from natural disasters averaged $1 billion weekly between August, 1992 and December, 1995. Given the magnitude of disasters in recent years, new ways are needed to address disaster response, recovery, and mitigation. In fact, every federal, State, and local agency charged with emergency management responsibilities is stepping up to the task, with the support of the private sector. On one hand, the nation must avoid, withstand, and minimize economic losses on humans and property from disasters to the extent feasible; and on the other, it must be prepared to respond to and recover quickly from disasters when they occur.

Disasters are a fact of life, especially in our country which is subject to more major storms than in any other on Earth. With the threat of major floods and hurricanes, potential damages are severe. Recognized experts in the field of natural hazards assessment predict that losses from disasters will continue to grow over the next 10–20 years, despite the best efforts of our emergency management practitioners. The Southern California Earthquake Center forecasts a high probability of a major catastrophic earthquake in California within the next 20 years. The repetitive nature of damages in many parts of the country illustrates need for new strategies to mitigate, respond to, and recover from the many looming hazards.

Several trends are increasing our vulnerability to disasters. One is global climate change. Extreme events believed to have been exceeded but once in a hundred years, on average, are occurring far more frequently, threatening the lives, property, natural resources, and vitality of local and regional economies throughout the nation. There is also a trend of increased development in risk-prone areas. As stated previously, the coastlines are particularly attractive to development and also especially vulnerable to disasters. Warning systems and shore protection efforts have made people feel more comfortable about development along shorelines, and, along with mitigation and insurance measures to alleviate short-term risks associated with living near the ocean and floodplains, may actually encourage concentrations of development in vulnerable areas.

Adequate investment in emergency management is needed to ensure the capability of federal agencies to respond fully and quickly when disasters strike. Coordinated planning is needed among key agencies who must work together to perform the readiness requirements under the Federal Response Plan, avoiding needless duplication of responsibilities, and undue hardship for State, county, and city agencies. Our nation, subject to more major storms than any other, needs the federal capability to deal with multiple emergency contingencies.

CONCLUSION

The President's Budget for the Corps of Engineers is a good one. However, we must continue to find ways to reduce our costs and shift more of those remaining to direct beneficiaries of our services. Meanwhile, we will do our very best to execute the Civil Works Program for maximum benefit to the nation.

With funding provided for our Operation and Maintenance Program in the fiscal year 2001 budget, we will be able to sustain customer services. However, we estimate that required funding for our highest priority maintenance backlog will increase to $450 million in fiscal year 2001—up by over $120 million from fiscal year 2000. I will continue to do all I can to make the O&M program as efficient as possible.

Based on our assessment of the nation's current water and related land resources management needs, we feel strongly that the nation faces significant, and demanding challenges in dealing with those needs. We also know that the Corps has many unique assets from which to draw in tackling those challenges. These include our longstanding and exemplary leadership role in water and related land resources management; highly competent multi-disciplinary workforce complemented through contracting by a large public sector workforce; world-class research and development laboratories; highly developed and continually improved business processes including the recently fielded project management process; geographically dispersed organization, recently restructured to provide more pertinent, flexible, and timely operations resourcing; and capital infrastructure including thousands of completed facilities.

Finally, we are committed to improvement in performance and customer satisfaction within available resources—continually maximizing actual and potential values of our organization to the Civil Works Program, the Army, and the nation.

Thank you Mr. Chairman and Members of the Committee. This concludes my statement.

Senator DOMENICI. Thank you very much. Now, Senator Reid, would you like to comment on any observations before we start questions?

Senator REID. I will, in the interest of time, Mr. Chairman, submit my statement and questions for the record.

Senator DOMENICI. Thank you very much. Senator Burns, do you want to have any comments first?

Senator BURNS. I'm just going to make mine in the form of a question, a couple of questions. I think it moves the process along.

Senator DOMENICI. Senator McConnell.

Senator MCCONNELL. Same here, Mr. Chairman.

Senator DOMENICI. Senator Craig.

Senator CRAIG. Same.

Senator DOMENICI. Senator Dorgan. Can I ask, are the Senators here interested in a specific item that they're going to inquire about? If it's a specific item, I'll let you proceed and I'll wait to do my indepth questioning.

FISCAL YEAR 2001 BUDGET

I have very big concerns about this budget. Once again, the Administration funds all of its initiatives and projects it likes at either 100 percent, or 92 percent of the Corps capability, and they take 30 or 40 high priority congressional projects and don't request funds for them.

Now, I don't think we can afford to just fund every one of the Administration's programs totally intact as they asked for and have a huge number of congressional priorities that aren't taken care of. Having said that, Senator McConnell, you wanted to ask about one project, one item?

Senator MCCONNELL. It's not one item, Mr. Chairman. It's related to the possibility of the Corps doing some of the cleanup at the Paducah uranium enrichment plant

Senator DOMENICI. Let's go in order. We don't want to be here beyond maybe 11:30 or 11:45. You can start any questions if you have any, Senator Reid. Mr. Burns, you can proceed.

STATEMENT OF SENATOR CONRAD BURNS

Senator BURNS. I would ask that my full statement be made part of the record, Mr. Chairman.

Senator DOMENICI. It will be.

Senator BURNS. I have a couple of comments and will start by apologizing that I am unable to stay for the whole hearing so I will address my questions to both the Bureau of Reclamation and Corps of Engineers now to get them in the record. Maybe we can take some of the responsibilities off the Bureau of Reclamation's shoulders, general. I notice they are still in the business of administrating grazing permits in Montana. Why? They aren't in that business. Shouldn't it be done by the BLM and could it be moved to the Bureau of Land Management?

Senator REID. You hope so.

Senator BURNS. Well, if it takes an amendment to do that, let us know and we'll be happy to try including it.

Also, I'm still having some concerns about the overtures I hear of flirting with reducing the budgets for purchase power and wheeling in the Administration's budget.

With the Corps, the issuance of permits in Montana continues to concern me. That is our biggest problem. I guess probably what has happened here, the attention to the Upper Mississippi Valley is carrying over into other smaller projects where the permits could be issued, yet we're just not getting any kind of timely issuance of those permits. We are having a hard time even receiving a decision whether a permit is needed or not. That's frustrating to a lot of folks along our rivers in Montana.

Also, I'm wondering if we can get assurances from the BOR on the ownership transfer of intake? The intake diversion dam, Glendive, Montana, was supposed to have been done years ago. We have legislation in the works authorizing this to be done and we're wondering about BOR's willingness to do this is a timely manner.

Now, saying all that, I want to end on a high note and thank the Corps for your interest in the fish hatchery at Fort Peck and other projects up and down the river. I think you've got a tremendous leadership team on the upper Missouri and we want to continue to work with you on those things. But there are additional things that I think we should direct your attention toward. I've heard from my constituents in Montana and they agree.

PREPARED STATEMENT

I do continue to have some concerns about the priorities the Corps of Engineers are setting and look forward to working with you and trying to work our way through it with the Chairman of the Committee. Nobody works as hard on this particular subcommittee as our chairman does. And thank you very much, Mr. Chairman.

[The statement follows:]

PREPARED STATEMENT OF SENATOR CONRAD BURNS

Thank you Mr. Chairman for the opportunity to address the committee today. As you well know, the Bureau of Reclamation and the Corp of Engineers both play vital roles in the management of the West's water resources. Overall, these agencies are a great asset to the West and have historically helped us in the management of our most valuable resource, water. I have been especially pleased with the working relationship that has developed between my office and the Corp of Engineers in our mutual effort to help the citizens of Montana.

However, as is generally the case when dealing with a valuable resource, contentions do arise between my constituents and these agencies. With some attention to management details, I believe we have the opportunity to smooth out these rough spots.

First, I would like to address some of the concerns with the Bureau of Reclamation. As most members of this committee are aware, many of the Bureau of Reclamation projects in my state are in dire need of repair. Unfortunately, I don't believe the Bureau has a comprehensive plan in place to address these needs. Additionally, the Bureau is consistently running into cost overruns and passing these added costs on to my state's constituents. In a time of economic hardship within our agriculture communities, these costs can be the difference between making ends meet and having to shut the family farm down. I would hope that the Bureau would examine their methods of cost estimation and construction costs and look for ways to keep our projects operational at a reasonable cost.

Additionally, I am curious as to why, in this time of reinventing government, that the redundant activities of various agencies aren't being consolidated. I make this point in relation to the Bureau because we actually have Reclamation administrating grazing permits in some areas of Montana. Why aren't we turning this activ-

ity over to the Bureau of Land Management, an agency much more suited to the task? I have been asked numerous times by my ranchers why they operate under two sets of rules on BLM and BOR grazing land. It just doesn't make good sense. I believe we can streamline these processes and better address the needs of the public. This is only one example of a non-traditional Bureau activity, I am sure that many others exist that are better provided by other agencies.

The Bureau also is continuing to flirt with the idea of addressing wheeling concerns through administrative means. I have made the point previously that any wheeling changes must be done legislatively and we will not tolerate an administrative rule change. I stand by my prior comments and feel they must be reiterated for the benefit of the Bureau. The questions surrounding wheeling are extremely important to my constituents and any administrative decision that does not allow them the representation due to them will only create divisiveness between the agency and my state's residents.

Last year I mentioned that I was curious as to what is holding up the ownership transfer on the Intake Diversion Dam north of Glendive, Montana. Supposedly this transfer was to take place in a fairly straightforward manner, yet we continued to wait for it to be finalized. In response I introduced legislation to transfer title to these projects, but I feel that it could have been done more quickly had the Bureau acted in better faith with the local irrigators.

In regards to the activities of the Corps of Engineers in Montana, I have to commend the Corps on their efforts to deal with many competing interests. As the permitting process in the Yellowstone area illustrates, it is hard to make a decision that will make everyone happy. The stakes are high and everyone has something to lose. I don't envy the position of the Corps in that regard. However, whether it is addressing an eroding landfill near Billings, or working to balance the needs of flood mitigation and wildlife habitat, the Corps has continued to shoot straight in dealing with most of our locals.

That being said, I must relay some of the frustration being felt due to the lack of timeliness in receiving permits. When we apply for permits in Montana, it is generally an urgent situation. Flooding may be threatening the land we earn our livelihoods off of. It may also be threatening our very homes. Unfortunately, I don't believe the Corps has a fast-track process in place that can address these urgent needs. I hate to go home and hear horror stories of bureaucratic inaction and work that didn't get done in time because the permit process moved too slowly. These are real people who have worked their lives for what they have. It is a tragedy when they watch it all disappear because the bureaucracy moved a little too slowly.

I urge the Corps to examine this problem and look at ways to fix it. To be fair, last year was a better year for permitting. Of the 600 404 permit requests in Montana last year, I am told that all were approved. This is good, however, I still have heard from numerous ranchers that they were given the run around in finding out whether they needed permits or who to contact to get the green light to move ahead on important projects. I would hope that the Corps would put a process in place and let this be known to Montanans that may need to apply for permits.

Another wrinkle in the relationship with Montanans and the Corps was the redirection of $400,000 of Section 33 money from an extremely important study on the Missouri River. The time lost in this study as a result will only lead to more erosion and problems on the stretch of the Missouri below Fort Peck. This is an important project and the money must be restored as soon as possible.

Finally, I would like to end on a high note and thank the Corps for their work on the Fort Peck Fish Hatchery. This project will be a great boon to Montana's fisheries and the Corps has moved forward quickly and professionally at the request of the State of Montana, local citizens and myself. I look forward to passing authorizing legislation this year and hopefully including beginning construction money in the fiscal year 2001 appropriations.

Mr. Chairman, thank you again for the opportunity to address the committee.

Senator DOMENICI. Thank you. We're going to proceed, then, with first arrival, is that fair enough? You proceed, Senator.

PADUCAH GASEOUS DIFFUSION PLANT

Senator MCCONNELL. Thank you, Mr. Chairman. Secretary Westphal and General Ballard, I'm sure you've read the articles in The Washington Post documenting the wide stream contamination and radiation exposure to the work force at Paducah, Kentucky gaseous diffusion plant.

As you can imagine, the workers and their families are justifiably outraged by the Department of Energy's misconduct. What is worse, up until the articles ran in the Post, the Department spent the past 50 years denying this sort of thing could have happened. Following the damaging press accounts, the Department of Energy committed more funding to cleanup and worker health testing.

Perhaps predictably, DOE has absolutely failed to make any headway on the conversion of the 57,000 cylinders of depleted uranium hexafluoride that are stacked outside along the fence of the plants. These cylinders contain a potent cocktail of hazardous chemical and radiological material. DOE began accumulating these 14-ton cylinders since the day the plants began production 50 years ago. Today, if you lined up these contaminated cylinders end to end, they would stretch from Washington, DC, to Ocean City, Maryland, 136 miles away.

In July 1998, I drafted legislation which was signed into law mandating that DOE begin converting this material into a nonhazardous state. To date, DOE has done little except study the situation. Already DOE has missed its self-prescribed timetable to have a contract award cleanup by the year and the fiscal year 2001 budget fails to provide sufficient funding to keep the cleanup on track. Frankly, I'm disappointed by DOE's inaction and lack of accountability. They have waited 50 years for cleanup and desperately needs a job. More importantly, the community deserves a start to the cleanup which by DOE's own projection will last more than 20 years.

Now, I raise all this because the Corps of Engineers has a cleanup track record and I'm looking to the Corps for assistance in cleaning up DOE's environmental legacy. So with that backdrop, let me propound a few questions. General Ballard, does the Army Corps——

Senator REID. Senator McConnell, what was Paducah originally used for? Why do they have 57,000 drums? What was the plant initially established for?

Senator MCCONNELL. It's been a uranium enrichment plant for 50 years. General Ballard, does the Army Corps have the expertise to undertake the conversion of 57,000 cylinders of depleted uranium cylinders immediately and convert this material to a benign state and to dispose of it permanently?

General BALLARD. The short answer is yes, Senator. And the long answer is that we've had quite a bit of experience not only working at the FUSRAP program but we are currently involved in—you may be aware of this—in doing a nuclear fissile storage facility in the former Soviet Union as part of the Nunn-Lugar amendment. So we have experience inside of the Corps, plus we have a number of our consultants and partners with us who have engaged in this type of work before.

Senator MCCONNELL. In fact, there is every reason to believe you could accomplish this task faster than the Department of Energy and better than the Department of Energy, is there not? Go ahead and brag if you want to.

General BALLARD. Well, we do have a fairly good track record of aggressively moving out on this type of work and I feel confident

that we could accomplish the job now faster and I would rather not brag to that respect but we can do it.

Senator MCCONNELL. Are there legal impediments to—if I were to try to assign this task to you all rather than the way it's currently being done so ineptly, are there legal impediments to the Corps undertaking these kinds of tasks?

General BALLARD. Not if we do it as a contractor or support to DOE so we don't run into the regulatory issues. And I would have to look at it even deeper but I don't believe there are any legal impediments that would prevent me from doing this type work for DOE.

Senator MCCONNELL. The Department has prepared an environmental impact study, a Record of Decision and a cleanup plan. Have you or your staff reviewed this material and is there anything that you are unfamiliar with or unable to deal with from a technological standpoint?

General BALLARD. My staff has reviewed quite a bit of data surrounding the Paducah facility and another one in Ohio. So I don't think that there is anything that's there that we are not really familiar with. I think we understand what the process is pretty good.

Senator MCCONNELL. Finally, the Department of Energy has made a big deal and has just notified the Army of the potential threat to our men in uniform since the metal armor was produced from the depleted uranium from the plant. Are you familiar with recent evaluation by the U.S. Army radiation research office?

General BALLARD. I am somewhat familiar with it, Senator. I am not an expert on it but I read the documentation surrounding that testimony.

Senator MCCONNELL. Does what you've read give you any concern about proceeding with the conversion?

General BALLARD. No, it does not.

Senator MCCONNELL. Thank you very much, Senator.

Senator DOMENICI. Senator Dorgan.

RED RIVER VALLEY, GRAND FORKS, NORTH DAKOTA

Senator DORGAN. Mr. Chairman, thank you very much. And I want to thank you, Chairman Domenici, and also Senator Reid for the assistance on the projects that we've been working on in North Dakota and I want to thank General Ballard and Dr. Westphal and General Van Winkle and others.

At one point in my congressional career, I was one of those who would use inappropriate language from time to time when I would reference the Corps because there are a number of things that I worked on, it just seemed to me like nothing quite got done. And then we got involved in a very significant flood fight in Grand Forks. The Red River Valley, particularly in the Grand Forks area caused us some problems. And I tell you, having the Corps involved in a flood fight with you is something to watch and I have deep admiration for the men and women who serve in the Corps of Engineers and I want to thank you for that.

DEVILS LAKE, NORTH DAKOTA

We have been struggling mightily in North Dakota with a lake flood called Devils Lake. And my colleagues know it well because

we continue to talk a great deal about it. But in human terms, it's not taking lives but it's destroying lives in many ways.

Duane Howard, one of the great rodeo champions in America—perhaps one of the best bull riders you would ever see in this country—lost 80 percent of his ranch. Eighty percent of it is gone. Now it's under the lake. He's lost his livelihood, lost his ability to make a living.

And Randy Meyers is a gunsmith and a paraplegic who watched his home torched as a health hazard, as the water from the lake enveloped his home. These are real consequences and so we've been struggling mightily to address something we don't see in this country very often—a lake flood with no inlet and no outlet for which there is not an easy solution.

And I want to thank you, Dr. Westphal and General Ballard, General Van Winkle. You all have been helpful. We're struggling to try to produce an outlet that would provide major releases of water in a manner that would not affect others but would take some pressure off that lake. And this is turning out to be a very, very difficult task but we must continue to work on it.

I would ask a couple of brief questions. With respect to the outlet that we've been working on, I know it is alleged by some, that the proposed outlet, will send the boundary's waters to Canada. It is our intention and your intention and the intention of anyone who is talking about an outlet that we would be required to comply with the boundary waters treaty. And we would have to go through an EPA process and be in full compliance with the boundary water treaty. Will you concur with that?

Dr. WESTPHAL. Yes.

General BALLARD. Yes.

Senator DORGAN. And it is also the case that if we construct an outlet to take the pressure off this lake successfully it will prevent this lake from going to the 1,460 level, which it has done some many, many years ago. I believe the Corps has indicated that the cost of the 1,460 level is somewhere around 500 and a quarter million dollars additional damage. Is that correct?

General BALLARD. That's correct.

Senator DORGAN. And the reason I ask these questions is, it describes the fact that this investment, in an attempt to address this flooding, is an investment that's good for the country. If we don't take some proactive measures here, we will certainly have to bear a much larger cost later. And we have to build dikes, raise roads, raise roads again, do all of these things to try to respond to the needs of people and we're still not able to keep up.

So I just wanted to make the point, Mr. Chairman, that I have appreciated your attention to this and appreciate the attention of the Corps as we work forward here. The Administration has asked for some $4½ million for some front end planning design. I understand from speaking with the Chairman that the construction itself has to be approved by Congress. We have to deal with that at a later time but the design, we hope we can keep that in this process.

That's a long way of saying thanks. I appreciate the work you're doing and the assistance you're giving us, both you and also Mr. Chairman and others in the committee

Senator DOMENICI. Well, let me assure you, Senator, that Devils Lake is imprinted on my brain. I have seen more of Devils Lake for never having visited it than any project in America. And in an effort to know about it, I finally have pledged to you that if I visit another State on a Corps project, I will stop over first at Devils Lake because it's a phenomenon that is very difficult to understand but it is real. And we will do our very best to get it started in an appropriate way and in this bill.

You keep reminding us but I think we won't have to work very hard. It will be in the Chairman's draft when we get the appropriation bill ready. If it's something that belongs in the supplemental, it will be there. I don't know what we're going to do in the supplemental. Some way we're not going to have any at all. So it won't be in there if there is none.

Senator DORGAN. The recommendation in the supplemental is actually where the small amount of money is—the larger amount of money is requested in the regular appropriations. But I look forward to working with you.

Senator DOMENICI. Senator Craig here next, please.

SNAKE/COLUMBIA CORRIDOR

Senator CRAIG. I'll be only brief. I came to listen but also to express to the Army Corps the importance I place on their missions and their responsibilities in the Pacific Northwest and especially in the Snake/Columbia corridor. My colleague from Washington is with me this morning. He and I watch you all very, very closely. We like our dams, we like our slack water, we like our fish, we like our hydro and we expect you to handle them responsibly. Thank you.

Senator DOMENICI. And that was even better than you did the last time in the Energy Committee. We can quote you on this. Senator Gorton?

Senator GORTON. Thank you, Mr. Chairman. I join you in saying I've learned a great deal about Devils Lake. I perhaps have even more understanding than Senator Dorgan coming from a wet State than you do coming from a dry State. But the problems that he faces there are very real and do deserve our help and I wanted to say that.

Senator DOMENICI. Incidentally, it's snowing in Albuquerque this morning, so don't call this dry. We're trying very hard to get a little water.

COLUMBIA/SNAKE RIVER PREFERRED ALTERNATIVE

Senator GORTON. But I do have some questions on the subject that Senator Craig rose, General Ballard. Two weeks ago, I met General Strock in my office to discuss the status of the Corps' environmental impact statement on the Columbia and Snake. He advised me that the Corps may be issuing a preferred alternative on whether to breach the Snake River dams this fall.

Can you specify for me a more precise time frame during which the Corps intends to release this preferred alternative and whether the public will have an opportunity to comment on it before it becomes final?

General BALLARD. Yes. Let me take the second part of your question. Most certainly the public will have an opportunity to comment on the preferred alternative when we release it.

Senator GORTON. Before it becomes final.

General BALLARD. Before it becomes final. The date—I'm looking at my colleagues now to give me the exact date.

General VAN WINKLE. Sir, we have a tentative date of October of this year but again, there are some negotiations ongoing and we have to make some decisions. So this is very tentative. I would give you that date as a rough estimate at this point

Senator GORTON. Can you tell me if there is additional information that the Corps will incorporate into its final decision or will it be based on what you know already?

Dr. WESTPHAL. Senator, let me try and answer that. We believe that the Corps really has most of the information it's going to need. Now, the biological opinion is going to be coming out here in a couple of months and how that would affect the EIS, we're not sure, but we believe that we are really ready to go forward with a final EIS. We've done the study, the analysis. This is not a decision document. This is an information document. So to expedite this, we think we can put out a final EIS probably in the October/November time frame.

Senator GORTON. You said a little later. It was September/October 2 weeks ago. Now it's October or November?

Dr. WESTPHAL. Well, only because before we were thinking about coming out with a draft EIS, another draft EIS, but if we go to a final, we could probably get it done by October. I don't want to speak for General Strock because they're still churning a lot of information and public comment, a significant amount of public comment from the recent meeting they had. So partly it's a function of that.

General BALLARD. But getting to the final rather than the draft, Senator, will get us into the dialogue much quicker.

Senator GORTON. Now, can any of you here provide me with an estimate as to whether the natural runs for spring and summer Chinook salmon on the Snake River will increase or decrease this year?

Dr. WESTPHAL. Well, the expectations were that they were going to increase this year, but there is some new research coming out now that CRI is coming out and I am not sure exactly when that will be public. But we are being told that there may be some—that the news from that may not be that good. But I don't know what it is. I couldn't tell you today what the CRI will tell us.

Senator GORTON. Will whatever happens this year be factored into the feasibility study and your recommendations?

Dr. WESTPHAL. No, because the CRI—well, we already have the analysis on the Snake River salmon. We don't really need to account for the remainder of the species in the Columbia River basin in our EIS because our EIS is lower Snake River EIS. So we've got what we need and we need to proceed forward with the EIS.

JOHN DAY LOCK AND DAM

Senator GORTON. One last question on this subject. I understand there are reports that the Oregon State Fish and Wildlife Depart-

ment questions your analysis or may question your analysis on the John Day study drawdown and it is pressing the Corps to pursue further study on this issue. I don't believe any more study is warranted. Can you explain the Corps' position on the drawdown and when we can expect the final decision?

Dr. WESTPHAL. We completed John Day phase 1 study and as you know, there is language in last year's appropriations bills that prohibits us from going to a phase 2 or a McNary drawdown study without permission of the Congress.

Senator GORTON. I'm familiar with that.

Dr. WESTPHAL. I thought you might be. But we intend to adhere to that language and we are not proceeding further.

COLUMBIA RIVER NAVIGATION CHANNEL DEEPENING

Senator GORTON. Now something on which I wanted to congratulate you and say how much I want you to succeed, and that is the deepening of the Columbia River, the navigation channel. I'm delighted with your reports and it seems to me that you're doing very, very well. Some environmental features of the project which obviously are important may be ready for construction in fiscal year 2001 but the Chief's report was completed so late in the budget preparation cycle that it couldn't be included in the President's budget as a new construction start.

If Congress were to appropriate a small amount of construction funds for fiscal year 2001, would the Corps be capable of beginning construction of these environmental features during that fiscal year?

Dr. WESTPHAL. I think so but let me defer to General Van Winkle.

General VAN WINKLE. Senator, we could. We have some capability estimates of around $4.5 million to do that in 2001.

CAPABILITY DISCLOSURE STATEMENT

Senator GORTON. Thank you. The National Marine Fisheries Service included a requirement that the Corps and local sponsors find and improve 5,000 acres of the habitat as mitigation. What are you doing to meet that requirement?

Dr. WESTPHAL. Sir, I'm not sure. I would have to get an answer for the record, unless you have one.

General VAN WINKLE. No, we'll have to get the details for the record on that.

[The information follows:]

CAPABILITY DISCLOSURE STATEMENT

Although project and study capabilities reflect the readiness of the work for accomplishment, they are in competition for available funds and manpower Army-wide. In this context, the fiscal year 2001 capability amounts shown consider each project or study PY itself without reference to the rest of the program. However, it is emphasized that the total amount proposed for the Army's Civil Works Program in the President's budget for fiscal year 2001 is the appropriate amount consistent with the Administration's assessment of national priorities for Federal investments. In addition, the total amount proposed for the Army's Civil Works Program in the President's Budget is the maximum that can be efficiently and effectively used. Therefore, while we could utilize additional funds on individual projects and studies, offsetting reductions would be required in order to maintain our overall budgetary objectives.

Hereafter, this statement is referred to as "the usual qualifications.

COLUMBIA RIVER CHANNEL DEEPENING

The biological opinion for the Columbia River Channel Deepening project clearly states in the terms and conditions that the Corps will, "as part of the Corps' ecosystem restoration mission and responsibility under separate authority, independent of the Channel Improvements Project, expedite the attainment of the objectives of the Lower Columbia River Estuary Program by restoring 1,500 acres of tidal wetlands by 2005, and 3,000 acres between 2005 and 2010, subject to Congressional authority and appropriation". The Corps intends to request funds for a new General Investigation (GI) study in order to fulfill this term and condition. This GI study would specifically address environmental restoration in support of the Lower Columbia Estuary Program. The restoration of habitat is not considered part of "mitigation for the deepening project". We will also use Section 1135, Project Modifications for Improvements to the Environment and Section 206, Aquatic Restoration, both part of our Continuing Authorities Program, for habitat restoration.

Senator GORTON. If you will get an answer on how you are working with local sponsors, I would appreciate it. But I do want to say I'm very enthusiastic about your enthusiasm and I want to congratulate you. And Mr. Chairman, I wanted to thank you very much.

Senator CRAIG. Mr. Chairman, could I do a follow up to an answer?

Senator DOMENICI. Could I just comment before you do that, Senator? Senator Gorton, we were having a hearing not too long ago on the purchase of the Boca, that big ranch in New Mexico, and I sat next to you as you questioned a U.S. Representative from the district that Boca is from, it's in his district, and I curtailed him and anybody present that it is not an easy thing around here and will never be to tear down the poor dams that are up there in your part of the country. Our Congressman got a lot of press that he was for tearing them down but your comments got in the paper also. I just wanted you to know you were pretty tough on that Congressman. But apparently this is one of the most important issues you have going, is that right?

Senator GORTON. It is very easy to say that and we did not appreciate the Congressman referring to it in that way. But as I told him then, he was extremely fortunate that he had you as a Senator because that means that he doesn't get punished with respect to the Boca ranch interference in our business.

Senator DOMENICI. I understand.

Senator CRAIG. Mr. Chairman, I was chairing that hearing and I must say that Senator Gorton, it was one of his finest hours, without question. In relation to final draft versus draft and public comment, what is it, what will it be, have you decided, and if it's a final, why then go back out for public comment?

Dr. WESTPHAL. When you do a final, you just simply put it out, not for public comment. You put it out for public review.

Senator CRAIG. Consumption but not reaction?

Dr. WESTPHAL. Exactly.

Senator CRAIG. So what are you doing?

Dr. WESTPHAL. We're heading towards a final. We believe we've got enough public comment and enough information to go right to a final. We don't need to put it out for more public comment and do another draft this time. That's my belief and that's what I would like to see happen.

Senator CRAIG. So that is what we should expect to happen?

Dr. WESTPHAL. I think so.

Senator CRAIG. All right. That it will be a final draft not for public comment, but for public consumption?

Dr. WESTPHAL. Right.

Senator CRAIG. Thank you.

Senator DOMENICI. Senator Stevens, I and Senator Reid have reserved our questions but if you would like to go, we would welcome them.

ALASKA NATIONAL DEFENSE SYSTEM MISSILE SITES

Senator STEVENS. I just came over from another subcommittee because I saw my friends Dr. Westphal and General Ballard are here and I would just like to ask you a couple of questions.

I just visited, General Ballard, with the Pacific Ocean Division of the Corps and, Secretary, this applies to you too. I believe the decision has been made that the Corps will handle the Alaska portion of the national defense system in terms of developing the site for the missiles and the support base that is necessary.

I want to make sure that there is adequate funding here to carry out that process and that we have thought about the staffing in the Alaska District and the Pacific Ocean Division that will be needed to do that. I think they have the expertise to do it and they've gone to construction in Alaska and I want to make certain that these people have the knowledge, and that we're supporting them in getting the kind of people they need to assure this is getting done in time and done properly.

General BALLARD. Senator, I'll address that. As I informed your staff, about 2 weeks ago, I moved the project management for that work from Huntsville to the Alaska District and we are currently evaluating the appropriate staff that they require. As you know, this project is much too important for us to fail. So I'm putting the appropriate oversight and staffing in Alaska for them to handle this work.

Senator STEVENS. I want to make sure that people understand construction.

Let me bore you all with a story. When I was a brand-new Senator, we got a new Federal building for Nome. I don't know if I told you this, but it was a really beautiful building for this small, historic town and they were going to have an opening in the spring. They decided to get the whole building warmed up before the opening. I went up there for the opening and guess what? The building had sunk about a foot and a half. No one understood the problems of permafrost and stability of soils and that's something we can't have happen on the national defense system.

General BALLARD. Absolutely.

Senator STEVENS. And so we have the ability and we have people who work in the Arctic who are contractors. And if we have people who have done beautiful work in Central America and they start doing it up there, we're going to pay the price. So I hope you really put some people in there that understand the Arctic, General, because this is going to be a big, big thing for the country if it happens. It's not that big for Alaska. The money is really going into

the systems rather than into the ground but we want it to be done right when it's done.

General BALLARD. I understand, sir.

Senator STEVENS. Do you believe we have the supervision that will be necessary to do this job right?

General BALLARD. I'm confident that we will.

U.S. ARMY COLD REGIONS RESEARCH AND ENGINEERING LABORATORIES

Dr. WESTPHAL. Senator, when you and I went up there last year, if I recall, I took a half a day away from being with you and went to visit the Corps of Engineers Cold Regions Laboratory there, and what we have is you basically go underneath the mountain and they study permafrost.

You can go inside this mountain and you can see the ice sitting in layers of dirt. And as you see, if you don't account for that, you put something on top of it and it melts, you've got a serious problem. So I think the Corps has the expertise and the ability and has it on site to deal with these issues.

Senator STEVENS. Well, we think that you ought to make trips often, make sure you inspect those sites.

Senator REID. Senator Stevens, did they ever fix the courthouse?

Senator STEVENS. As a matter of fact, we built a new one and used the other one—it has a nice basement, it does—it is still used but not for a courthouse.

Senator CRAIG. Keeps sinking?

Senator STEVENS. I don't have any other questions, gentlemen. I appreciate your response to requests for information I've made and I do have great confidence in the work that's done by the Army through the Corps of Engineers. They're our neighbors and do a great many things. We're hopeful in time we'll have reports to you on developments of perhaps a new port on the northwest coast so we can open up some of those mines up there. But that's still coming through the stage of design and research and it's not ready to come to the committee yet.

I would like to have you all come up there and see that sometime. You ought to see this area of Alaska. Very few people come up to see the northwest coast of Alaska. It's beautiful. Tremendous mineral content. The problem is access.

Senator REID. Is that where Nome is?

Senator STEVENS. It's actually above Nome. It's north of Nome. But Nome is on the Seward peninsula in northwest Alaska.

Senator DOMENICI. We appreciate you coming to our committee today. We look forward to working with you on the budget.

Senator STEVENS. I'm your humble servant if you're ready to talk about the budget.

Senator DOMENICI. The Corps of Engineers funding for your missile project will be in Senator Burns' committee in military construction.

Senator STEVENS. Yes, but these two were both in your subcommittee.

Senator DOMENICI. I'm with you. Senator Reid, please. Thank you.

Senator REID. Thank you, Mr. Chairman. First of all, General Ballard, I want to join with the others to congratulate you on a stunning military career. It's not often that you find someone who finishes their career with three stars and you should be very proud that you've rendered a great service to the country.

General BALLARD. Thank you, sir.

RURAL NEVADA WATER SUPPLY INFRASTRUCTURE

Senator REID. This question could be answered by anyone who cares to. The Federal Government is imposing increasingly strict regulations on water supply. In areas like Las Vegas and Reno, they can handle that. But for 10, 15 percent of the population of Nevada covering 70 million acres, they have a real burden. And I'm particularly interested in one of the provisions for rural Montana and Nevada in section 595 of WRDA, 9299. But, of course, there are a host of others around the country that are concerned in addition to Montana and Nevada. Do we have any reason that we haven't budgeted money to take care of these problems? Do we have threats, for lack of a better description, that we're going to have higher restrictions on arsenic content and other things and we have no money to cover all this?

Dr. WESTPHAL. Let me take a stab at that. I think these questions—and I'm going to get on a limb here but I think these questions, such as the one you posed, Senator Reid, and some of the ones that I'll have to deal with throughout testimony here and in the House will require, I think, some greater dialogue between the Administration and the Congress as to how far out we want to get into this type of work.

This is not traditional mission work of the Corps of Engineers. However, there is a national need for this. There is no question that the need you just outlined is there. It's there in many rural areas. It's there in many parts of the country. We operated, putting together our budget, on the premise that we have a very tight budget and we needed to fund the projects we already had in the works. So these types of authorities that have been in previous WRDA bills simply didn't get the funding.

But I think there is an increasing debate about doing this kind of work and I believe that the only way we're going to successfully attack it nationwide is to have a dialogue with you and to come to some understanding as to how far we want to get into it and how we want to do that work.

Senator REID. All I know is that we're going to have a crisis because when these restrictions in effect come into it and local companies are trying to—water companies are trying to meet these standards. Impossible, can't meet them. The amount of money, the cost is more than the water districts are worth just to solve one of the water problems.

Do you think the Corps has the capability and expertise, if you had the money, to address these problems?

CONSTRUCTION AND MAINTENANCE BACKLOG

Dr. WESTPHAL. I think the Corps does have the capability and expertise. Now, again, we have to face the argument that some pose that say, well, you've got a huge backlog of work and construc-

tion and O&M. How do you reconcile putting money into other things when you've got this backlog?

So I think we need to address both those issues. We need to address the backlog issue and how much it is and how much we have to—how much we're going to need to really make a dent on that. But we also have to—we can't stay still. We can't not support the needs of the country as they arise in the future. So we have to look to the future. We also have to address the past. And for us, it's a simple game of mathematics. We just have not had enough money to put in the budget to address all of these adequately.

Senator REID. Dr. Westphal, estimates range up to $45 billion in backlog water resources this country needs. That doesn't take into consideration what I've just talked about, some of the new rules that will go into effect. And you have in your budget request $4 billion. It's without any question that this is inadequate funding, $4 billion.

Do you have a plan to do away with this huge backlog? I mean, are we going to see additional requests in the years to come or are we going to continue doing less than one tenth of what is needed?

Dr. WESTPHAL. Well, there are a number of things we could do. We can certainly address the backlog from the standpoint of greater efficiencies and I think the Chief has done that. He has done a very good job of trying to find ways to make the program more efficient and use those gains to make up some of the backlog. But that's a very small dent into a big problem.

Second, I think we can look at—you mentioned the $45 billion. That includes a lot of projects that are absolutely not moving. They are simply—they are deferred or there is just nothing going on there. So there is a lot of—perhaps half of that work is work that we probably aren't going to do certainly in the near future and we need to address to determine with you if we are going to go forward with that work and at what pace and at what level and is there a Federal—non-Federal sponsor for the work.

So we also need to look at the authorized projects that are simply not going to happen. They're not going to get built, they're not going to get constructed, because of the environmental issues or because there is no local sponsor. So there is a variety of ways of dealing with it, and as I requested from Chairman Smith of our authorizing committee, we're going to be looking at that backlog pretty seriously, taking a look at the lists of projects out there and making some analyses that we hope to be able to provide some recommendations on.

WETLAND PROPOSALS

Senator REID. Mr. Chairman, I have a number of other questions. One includes some technical answers that I need regarding wetlands proposals and whether or not, again, you have the adequate personnel to meet these demands. When problems arise regarding the wetlands rules, it's taking too long to resolve, and in the process of resolving these wetlands problems, people are literally going broke. They have to borrow money, waiting until there is some definitive answer from the Corps and, in the process, the interest payments are going up.

So I have 12 other questions that we'll submit to you in writing because the Chairman hasn't had a chance to ask questions. I'm going to stop now. But if you would get back to me within the next couple of weeks with written responses to these written questions, I would appreciate it.

RIGID REGULATORY STANDARDS

Senator DOMENICI. Senator, thank you so much for your being brief. I want to also say that inherent in what I see of the rural communities with smaller water systems and the new rules is a serious question as to whether the standards that have been set up are too rigid. I mean, nobody wants to look at it. I mean, they just want to say, how much is it going to cost to do what somebody is telling us to do.

But the question may be, for a whole lot of America, are those standards that are being insisted upon, are they really necessary. And I'm not going to ask any of you. That's not your expertise. But it's obvious we're asking rural areas to build some rather fantastic facilities for very small systems that cannot achieve the kind of things that a major system can in a city. And I don't know who is going to look at it because it would seem to me the Administration doesn't want to look at it, at least for a while.

FALLON, NEVADA

Senator REID. Mr. Chairman, just in one rural committee, an agricultural community in Nevada, Fallon, Nevada, they have an arsenal and they've had it for many years. It's estimated that it will cost each water user in Fallon $100 a month to meet the requirements that they have. That's $1,200 a year. They can't do it.

Senator CRAIG. I've been to Fallon. No, they can't afford it.

Senator DOMENICI. The question, however, is that arsenic standard, is that reasonable and rational and does it make common sense? We have background arsenic in many communities that have been there forever. I imagine that community and many areas around it have a level of arsenic in the water that has not been dangerous and we come along and say—and you can't get it out of the natural environment. We say you've got to do it in the water system.

Senator CRAIG. Mr. Chairman, I assume in Fallon, that's a very mineralized area, that that's a natural water level, is it not?

Senator REID. In Fallon, it's not a mineralized area, but for reasons we don't fully understand, it's always been heavy in arsenic. Like up where I'm from it is mineralized, we have an arsenic problem there.

Senator CRAIG. But it is considered a natural State.

Senator REID. Totally.

FISCAL YEAR 2001 BUDGET PRIORITIES

Senator DOMENICI. Okay. Let me just say, I have a series of questions for you, Dr. Westphal, with reference to the Administration's budget. I've alluded to them, but I'm just going to mark three points.

The $4.064 million budget request has funds for high priority Administration environmental projects such as the Everglades funded at 100 percent of the Corps capability for 2001, and deepwater ports, 92 percent of your capability. But its severely underfunded ongoing flood control and inland waterways—funding them at only 62 percent of the Corps' capacity, and it excludes from the budget requests 40 projects which are high priority for the Congress.

Now, frankly, Dr. Westphal, you're to be commended for your efforts to put forth a somewhat better budget than we had last year, and I compliment you for it. I think in areas where you put some pressure on, we've got a better budget. But how are we going to deal with this enormous disparity between the Administration's priorities and Congressional priorities?

Now, if they all meet the same tests, cost/benefit ratios and the rest, I mean, why are the President's more important than these items the Congress has continually supported? How am I going to do that? What do you recommend?

Dr. WESTPHAL. Well, Senator, I think that we did fully fund the Everglades and that's because we're at a point where that particular project is absolutely critical to get that comprehensive study underway. It's a 20-year project. The State is cost sharing that at a 50/50 rate, so we felt that's a very high priority to go forward. It's a national priority.

In the navigation area, of course, we are still relying on the use of the new Harbor Services User Fee proposal which would allow us then to fully fund at capability levels all our navigation of our harbor projects. So we're able to make use of that fund for that. Last year, I think you appropriated somewhere in the vicinity of about $700 million out of the fund for the O&M part of that. This year, if the fund were implemented, it would be about $900 million out of the fund for O&M construction.

Senator DOMENICI. The Everglades has $1.8 billion in new authorization for the Everglades.

Dr. WESTPHAL. It's $158 million in this particular year.

Senator DOMENICI. But the new authorization is $1.8 billion. Look, I'm not critical of the Everglades. It's a fantastic project and I'm sure this Committee wants to fund it mightily. But we're in a real spot when the Administration takes 40 projects that you have gone through and you've signed cost benefit sharing agreements with great fanfare. People are waiting, anticipating continued construction. They've got cost sharing agreements that you have signed, they're ready to put up their share. And all of a sudden they disappear from the President's budget.

I can tell you right now, that's not going to happen. I'm not going to fund them unless we get some more money from the allocation, we're not going to fund the Administration's at its request and fail to fund Congressional priorities. You all are going to take a little cut in order to fund some of ours. There is no evidence that the President picks out better water projects in terms of those that have clear cost benefits than Congress can. So we have some prerogatives and I want you to know it's going to be tough. We'll work with you as best we can.

I had a series of questions I was going to ask you about the integrity of the Corps process. I think you've satisfied my concerns. I'll submit them for the record .

General BALLARD. Thank you, sir.

CORPS REVIEW

Senator DOMENICI. I would want to know, there is a serious internal study, Dr. Westphal, occurring within the Administration because of the articles about the Corps, perhaps The Washington Post story. Now, who is conducting the review? Is it the Defense Department that's conducting the review or who within the Administration is conducting that?

Dr. WESTPHAL. There are three things underway. The first is—and General Ballard alluded to them. The first is the Secretary of the Army has asked the National Academy of Sciences to do an independent review of the Upper Mississippi Navigation Study, of that process.

Senator DOMENICI. National Academy of Sciences?

Dr. WESTPHAL. Right. The National Academy has done some work for the Corps of Engineers in the past on assessing the current principles and guidelines so they have some expertise in this area. There was a feeling that there was a need to have a totally independent and outside review of this study. So that's been ordered and that's underway, I believe, or will be underway shortly.

The second matter is that there are—and I can't tell you specifically because I don't know, but there are investigations of these allegations of misconduct and that's being handled through the appropriate Inspector General and those types of organizations within the Department of Defense and the Army.

The third matter is simply that the Secretary said, because there were also allegations that the Army may not have been in control of the program or something to this effect, that the Secretary simply said, we will assess, we will ensure that the management and oversight of the Corps of Engineers is there. And that is not a study. That is simply looking at the regulations, I assume. And again, I'm not a part of that. I don't know when the Secretary is going to put that out or make a statement about that.

Senator DOMENICI. But I want to state for the record here, so there is no misunderstanding, Senator Reid has just agreed with me, and I'm sure that I will get Chairman Stevens and ranking minority member Byrd, we're going to make sure the Administration understands that if, as a result of this study, there are any serious recommendations regarding restructuring, that we want a review process for the Congress, and we will make sure they know that. I don't know whether it should be 6 months or what, but clearly we support what you do, yet we think we have good oversight. There still remain people who think the Corps shouldn't be doing so much work in America and what they do is not necessarily in the best interest of our country. So there are a few of those in the Administration. That's their business, not mine.

But you understand that we would be very concerned that from an investigation should any restructuring occur without Congress understanding why and what it's going to do to the Corps as it's conducting itself. We're pretty proud. The Corps went through a

difficult year about 25 years ago and I was here for about 8 or 9 years. And it's highly respected and Congress respects it tremendously for the kind work it's been doing and that's thanks to you and your predecessors, Mr. Secretary, and the good Generals who have been in charge.

RIO GRANDE RIVER BASIN STUDY

I'm going to ask you a couple of questions, but I'm going to move for a minute to your requests for Comprehensive Red River Basin studies. And let me just suggest, I'm going to ask you about them in writing. And I do want you to know that you included a river in my State called the Rio Grande River.

I don't know what I'm going to do with your request as I share my concerns with the subcommittee members and the full committee members but I do want to suggest that there are large numbers of stakeholders that some of whom are Federal agencies who are equal stakeholders, if not more so than the Corps, and I have to try to figure out whether we're going to get something constructive out of a comprehensive river basin study that you all would do. No aspersions on you. It's just when you look at all the players, are we apt to get something better or something that's just going to make the stakeholders more upset and angry?

I, myself, am looking for a way to bring the stakeholders together. Bureau of Reclamation is involved, I should know, because they control the water flows in some facilities. And the Commissioner will testify next, and he's been doing a yeoman's job trying to allocate the water shortage in the Rio Grande. You're aware of that and I very much appreciate your personal knowledge on the subject. But you understand that your operations may not be what I, as a Senator, think are going to solve any problems.

Dr. WESTPHAL. And Senator, as I said in my oral statement, I want to proceed by working first with you and the other members, I've engaged Senator Burns and Senator Baucus on the issues on the Yellowstone because I think we need that input. And if for some reason you think that we ought to change this plan in some way, I'm very, very attentive and very willing to do that.

PICATINNY ARSENAL HEAVY METAL CLEANUPS

Senator DOMENICI. Now, do any of you have any further comments? I will submit questions if you'll answer them. I just have one question about the heavy metals cleanup at the training ranges. Last year $3 million was included in the defense appropriation bill for work of extracting heavy metal from soils at various training ranges. This is a joint project between the heavy metals office at the Picatinny Arsenal in New Jersey and New Mexico State University. Evidently someone in the office of the Secretary of Defense saw this term "remediation" in the title of this project and sent the $3 million to the Corps of Engineers. I'm not sure that's what was intended, but that's where it is.

While you do remediation work for the Department of Defense, the $3 million is earmarked for heavy metals office at the Picatinny arsenal and it was not intended for the Corps—I know it was not intended for the Corps but it ended up there. We had been unsuccessful in having the funds transferred back to Picatinny. Are ei-

ther of you, General Ballard or Secretary Westphal, familiar with the issue? And I understand that funding was directed to the Corps of Engineers by someone else in the Department of Defense, but I want to make it clear that this $3 million must be transferred back without delay so we can get something done.

General BALLARD. I'm familiar with it, Senator, and I was briefed on it this morning. We didn't go looking for it. I thought it was $3 million filed on post, but I'll quickly return it. We'll get it returned by——

Senator DOMENICI. You can check it out and make sure what I'm saying is right.

General BALLARD. Yes, sir.

Senator CRAIG. The check is in the mail.

Senator DOMENICI. I do want to comment, with reference to cleanup that involves low level nuclear waste and the like. Somebody in the U.S. House had an ingenious idea that maybe we ought to experiment and let the Corps of Engineers do some of this cleanup because we had been involved in many of these projects, I mean, it's safe to say, but we never got anything done. We kept turning the soil and nothing happened.

FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM

And now we have a program called FUSRAP and we've appropriated $150 million for the current year and the Corps is doing cleanup work. I want to suggest that from everything we know, you're doing a good job. And as compared with the huge delays and the kind of circuitousness of the Energy Department's efforts and cost increases, I mean, we get an estimate of $300 or $400 million, turns out $2 or $3 billion by the time the 10 years is examined.

So are you confident that you all are monitoring this program and that the work is being done properly? And I ask both of you that. Do you have any complaints of a serious nature that you might want to put on the record?

Dr. WESTPHAL. I think we're finding great success with this program, doing it on time and in a very efficient manner. I think that the Corps has taken this task on very seriously and has done a great job.

General BALLARD. I share those concerns, those comments. We have taken this program on now and we, in fact, we are quite a bit further ahead of schedule. Probably the most important thing we did with then-existing authority and capacity, is that we did not grow one FTE for doing this program.

Senator DOMENICI. Well, I want the record to show that nobody from the Corps, indirectly or directly, ever came to see me and ask me to fund this program. So if somebody thinks you all are lobbying for this cleanup, I never heard it. I believe the House came up with the idea. We transferred about $130 million from DOE to the Corps.

General BALLARD. Yes, sir.

Senator DOMENICI. So I think it's very, very important that you do that job right and that you monitor it very, very closely because these kind of programs have a tendency—you know, something seeps out and it becomes a very big eyesore for big groups of people

and we don't want that on the Corps for having stepped up to the plate and doing a better job than anybody else in this regard.

ADDITIONAL COMMITTEE QUESTIONS

Unless you, Senator Craig, have anything, I'm going to submit the questions.

Senator CRAIG. I do not, Mr. Chairman

Senator DOMENICI. You're excused. And thank you very much.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTIONS SUBMITTED BY SENATOR PETE V. DOMENICI

PROGRAM OVERVIEW

Question. The budget request for fiscal year 2001 totals $4.064 billion for programs and activities of the Corps of Engineers compared to a total appropriation for fiscal year 2000 of $4.142 billion. The budget structure and the approach taken by the Administration in funding projects are very similar to the fiscal year 2000 budget. Specifically, the Corps' budget request: funds high priority Administration environmental projects such as the Everglades Restoration at 99 percent of the Corps capability for fiscal year 2001; funds selected deep water port projects at 92 percent of the Corps capability for fiscal year 2001; severely under funds ongoing flood control and inland waterway projects (funded at only 60 percent of the Corps capability), and excludes from the their budget request about 40 projects which are high priorities of the Congress. Dr. Westphal, you are to be commended for your efforts to put forth a somewhat better budget request for the Corps in fiscal year 2001. Yet similar to last year, there are a number of concerns as I have listed above. Can you explain to the Committee why there is such a significant disparity in the balance between various elements of the ongoing construction activities of the Corps water resource program?

Dr. Westphal. In an ideal world, we would very much like to finish all our continuing projects on optimum schedules and start new projects to meet additional needs as they arise. However, in the real world where we have funding constraints, we must try to balance the need for new projects proposed by the Administration and Congress with the needs of our continuing projects. Ultimately, we blend the priorities together as best we can to meet the most urgent needs in both areas. For the fiscal year 2001 budget, 24 port development projects and activities are funded to meet near optimum completion schedules in accordance with the proposed Harbor Services User Fee, which would cover all federal construction costs. In addition, 8 high priority continuing projects and 1 high priority new start project for mitigation, ecosystem restoration, and other purposes are funded to meet optimum completion schedules. However, there are also 6 environmental projects and 4 environmental programs that are not funded at optimum levels. Amounts for 168 flood damage reduction, inland waterways, and shore protection projects, as well as the 6 delayed environmental projects and 4 environmental programs, are constrained to a level that is, in the aggregate, about 63 percent of what is needed to maintain optimum completion dates. The varied funding schedules for different types of projects primarily reflect the sources of funds available to implement them.

PROJECT DELAYS

Question. How many projects in this budget proposal have extended completion dates compared to the fiscal year 2000 program level? What would it take to fund all ongoing projects at a level which would maintain completion schedules anticipated by the appropriation for fiscal year 2000?

Dr. Westphal. There are 57 projects in the fiscal year 2001 budget that have extended completion dates compared to the fiscal year 2000 program level. About $158 million would be required to maintain the completion schedules anticipated for these projects by the appropriation for fiscal year 2000.

Question. Now Dr. Westphal, as I understand it you are required to enter into a cost sharing agreement with a local sponsor before constructing a project, and that you do this with much publicity and fanfare. Is this correct? Why then, does this Administration not feel it is important to carry through on the commitment made when signing the cost sharing agreement by funding many of these projects at opti-

mum or even near optimum rates? What do you expect these communities who have put themselves into debt to cover their share of the project costs to do? Since there is no funding requested in your budget for fiscal year 2001, how do you expect construction to continue to meet your commitment to these communities?

Dr. Westphal. You are correct, we are required to enter into project cooperation agreements with non-Federal sponsors before initiating construction projects. However, public signing ceremonies for these agreements are held only when the sponsors desire such events. We do feel that it is important to carry through on the commitment made when signing the project cooperation agreement. Nevertheless, budget constraints do not allow us to implement all projects at optimum or near optimum rates. We hope that sponsors can be patient and work with us to complete their projects as soon as possible within the context of our budget ceilings. Some projects for which Congress has added funds in previous years are not included in the Corps budget. Generally, these are projects that are not economically justified or could be accomplished by local interests, and consequently have low budget priority. Projects of this nature may continue to the extent that funds are added by Congress.

INTEGRITY OF CORPS' STUDY PROCESS

Question. In January and again in February, the Washington Post published articles that raised serious allegations regarding the integrity of the U.S. Army Corps of Engineers and its process for developing recommendations related water resource projects. If true, the validity of the investment of resources in carrying out projects resulting from the study and planning process is brought into question.

Dr. Westphal and General Ballard, do you agree with these allegations as they relate to the broader study and evaluation process, excluding for the moment the Upper Mississippi River Navigation Study which was specifically mentioned?

Dr. Westphal. I have great confidence in the Corps. With regard to the allegations in the press, I strongly believe we should withhold judgement until completion of the review and inquiry directed by the Secretary of the Army.

General Ballard. No Sir, I continue to stand behind the integrity of the Corps and its processes. The Corps planning process is based on the Principles and Guidelines (P&G) that were adopted by the President on March 10, 1983. These Principles and Guidelines are the culmination of a series of earlier efforts to develop a coherent planning process beginning in 1958 that resulted in the publication of Senate Document No. 97 in 1962. This document established the principles, standards, and procedures for planning water projects. This evolutionary development of the planning process has had the support of the Congress and has stood the test of time. As recently as 1999, the National Research Council of the National Academy of Sciences produced a report entitled "New Directions in Water Resources Planning for the U.S. Army Corps of Engineers". Overall, the findings of that report were an endorsement of the Corps planning process.

Within the framework established by the P&G, the Corps has established procedures for implementing cost-effectiveness analyses for environmental restoration projects and is continuing efforts to improve the quantification of restoration outputs. The Corps has also made great advances in evaluating potential flood damage reduction projects in a risk framework beyond what is called for in the P&G.

Question. General Ballard, the Washington Post articles suggest problems with your study process. Are you concerned about the current process, and, if so, how do you intend to identify and correct possible deficiencies? Is the current study process sound, recommending the best projects possible?

General Ballard. I believe that the current Corps study processes are sound and determine the best projects possible. However, reviews of these processes are underway. While I firmly believe that through these investigations the Corps will be vindicated of all allegations, appropriate actions will be taken if deficiencies or opportunities for improvement are identified.

Question. Dr. Westphal, I understand that Secretary of the Army Caldera has initiated a review of the Army's management of the Corps of Engineers to ensure there is appropriate leadership and oversight. I believe it is fair to say that the appropriate Committees of the Congress expect to be consulted prior to the Army making any changes, but what are the specific concerns regarding the current leadership and oversight structure? What changes are being considered? Have any changes been instituted or approved for implementation?

Dr. Westphal. I believe Secretary Caldera is looking for opportunities to improve the Army Civil Works program by clarifying responsibilities, improving communications, and strengthening accountability. No changes have at this time been instituted or approved for implementation, to my knowledge.

Question. Specifically, who is conducting this review, and what Federal agencies or Executive Offices are involved?

Dr. Westphal. The Secretary has assigned this review to the Under Secretary of the Army. No other Federal agencies or Executive Offices are involved.

Question. What is the schedule for completing the review?

Dr. Westphal. I am not aware of a definite schedule, although I am sure that Secretary Caldera wishes to implement whatever changes he recommends in a timely way.

Question. Why is this review being conducted by an internal Army/group instead of an outside independent entity?

Dr. Westphal. The Secretary considers this to be an internal Army management issue.

"GROWING " THE CORPS CIVIL WORKS PROGRAM

Question. Another allegation put forth in the post inferred that the Corps of Engineers is involved in some secret, dark of the night plan to grow the Civil Works program from $4.0 billion annually to $6.0 billion.

Dr. Westphal, the Post article leads one to believe that the Corps of Engineers is out of control, running around without any oversight. Do you believe this to be the case?

Dr. Westphal. No, Sir, I do not believe that the Corps of Engineers is out of control. The Civil Works program receives oversight from my office on a regular and continuing basis.

Question. Dr. Westphal, your response to the Post reporter on this issue was, "Oh my God. My God. I have no idea what you're talking about. I don't believe this." Could you explain your response? How is it possible that you could not know of such an effort if it were true?

Dr. Westphal. First, let my say that the Post reporter caught me by surprise. I certainly knew that General Ballard and his staff had undertaken an analysis of the Nation's water resource needs and an evaluation of what the Corps could do to be more responsive to the needs. I had not been briefed on the specifics of their analysis, which I'm told was still in the formative stages at the time.

Question. General Ballard, please explain any plans you may have underway to "grow" the Civil Works program. How would it be possible to carryout such an undertaking to double the size of the Corps program without the knowledge and approval of the Army, the Administration, and the Congress?

General Ballard. First, let me state emphatically, growth in the Civil Works program is only possible if the Congress appropriates the funds. The "growing" the program referred to by the Washington Post was an internal presentation to me and the members of my Board of Directors aimed at generating discussion of National water resources needs and what the Corps could do to satisfy these needs. It is incumbent upon us in the Corps, as public servants, to lay out for the Army, the Administration and the Congress our assessment of water resources needs so that national decision makers can act in an informed manner. And, as I pointed out in my statement, I believe there are substantial needs that today are not being met.

Question. Dr. Westphal, both you and General Ballard have spoken with me regarding the need to address serious and significant backlogs in the operation and maintenance, and recreation programs. Is this part of what the Post had in mind? What is the amount of authorized, but unfunded work the Congress has approved for the Corps of engineers to undertake?

Dr. Westphal. I am not sure just what the Washington Post reporter had in mind, but the national needs that General Ballard and the Corps staff have laid out include the growing maintenance backlog and the seriously degraded recreation system. The backlog of deferred critical maintenance on projects will rise to $450 million in fiscal year 2001. These are a very important part of the water resources needs, along with new requirements for navigation, flood damage prevention, environmental restoration and enhancement, and others.

The total estimated Federal cost of completing unfinished projects that Congress has authorized for construction by the Corps of Engineers is about $37 billion. This amount includes $23 billion for projects classified in the active category that are included in the fiscal year 2001 budget, $7 billion for projects classified in the active category that are not included in the fiscal year 2001 budget, and $7 billion for projects classified in the deferred or inactive category that are also not included in the fiscal year 2001 budget.

UPPER MISSISSIPPI RIVER NAVIGATION STUDY

Question. Now with regard to the Upper Mississippi River Navigation Study, the Washington Post and I believe, an employee of the Corps have implied that certain Corps officials have inappropriately tried to influence the outcome of this study. General Ballard, do you believe this to be the case? Please explain.

General Ballard. No, Senator, I do not. I have the utmost confidence in the professionalism and integrity of the members of the Corps of Engineers—both Civilian and Military. I am confident that the various investigations that have been launched to look into those allegations will show to everyone's satisfaction that the Corps has pursued this study properly and prudently. Having said that, I also want to state that if the investigations should uncover any wrongdoing by anybody in the Corps, I would not hesitate to take swift and decisive corrective action.

Question. What actions have you taken to review this matter and when can we expect to know the outcome of your review?

General Ballard. Actually, Senator, along those lines there have been two significant internal events. For one, the headquarters has completed its policy review of some of the study team's draft products. Our review found that the District conducted the study in consonance with the Principles and Guidelines. Nevertheless, additional information and explanation are required. The complete findings were provided to the Division for further action. This, by the way, is a normal step in our process for a study of this size and complexity.

Additionally, due to the serious nature of the allegation of wrongdoing in reference to one of our employees, I directed an internal investigation in accordance with Army Regulation 15–6. The investigation is complete and found no misconduct. I am willing to provide you with the results of the investigation. There are also a number of external investigations or reviews in progress. First, the Office of Special Counsel (OSC) has requested that the Secretary of Defense investigate the allegations and report his findings back to OSC.

Second, the Surveys and Investigation Staff of the House Committee on Appropriations has begun its investigation. We have met with them, provided them information and documents they requested, and remain committed to fully supporting them as they continue their investigation.

Third, we have provided information requested by the Department of the Army Inspector General in support of their investigation and are scheduled to meet with them to answer any additional questions they may have.

Finally, the Secretary of the Army has directed an independent assessment of the economics of the study.

Question. As I understand, the major allegation is that Corps officials directed changes to an economic model, thereby creating the appearance of manipulating the process to gain a favorable benefit-cost analysis. How do you answer this allegation?

General Ballard. The economic model that was developed for this study appears to be a good one, and many notable economists have applauded it. On the other hand, other economists differ with the application of the model. Models are merely analytical tools. What is of importance is the analytical methodology employed by a model and the accuracy of the data that is fed into it. Apparently at the heart of the controversy is a mathematical formula which is designed to predict the likelihood, based on changes in the costs of shipping, that shippers would change modes and destinations for shipments of given commodities that could otherwise use the waterway. Specifically, there is a term in the formula—often referred to as the "N-value"—that reflects the elasticity of demand for river-borne commerce for a given commodity. To estimate this variable, assumptions must be made about future demand for commodities that move on the waterway as well as assumptions about alternative markets these commodities could move into. While the Corps economist who developed the model has his own ideas of what the "N-value" should be, other economists have complained that his assessment of the "N-value" is incorrect. Various examples for this divergence of opinions exist, but it appears to me that the "N-value" is not really a constant number, but is rather a function of many variables that are difficult to reliably predict for the 50-year economic life of the project. I should note many of the variables that determine N-values are also used in the commodity forecast for the study. This uncertainty in our analytical process is exactly why we require sensitivity analyses in our inland navigation studies to better understand the effect the assumptions have on the ultimate results. What has been averred as an attempt to manipulate the model is really an attempt by the people who ultimately will have to formulate the Corps recommendation to gain a better understanding of its operation and how it responds to alternative assumptions. These decision-makers must be sure that the model neither understates nor overstates the economic effects—especially considering that these effects are monetarily

significant and will get compounded well into the future. Before we can make any recommendations, we need to have a firm grip on the sensitivity that the model will show toward the various assumptions.

Question. Did anyone with the Corps of Engineers direct changes in the economic model with the intent to inappropriately influence the economic justification of the Upper Mississippi River Navigation Study?

General Ballard. I don't believe so, Senator. Let me explain the reason for my confidence that such is the case. First I believe in the professionalism and dedication of the Corps team. While my trust in my own team is high, I am a realist enough to know that individuals can and do make mistakes. My confidence is high even in this regard, in that our process has a series of built in checks or "safety nets". These include independent technical reviews, a minimum of two formal public reviews, Washington level policy review, State and Agency coordination requirements, and a final review by the Executive Branch under Executive Order 12322. I note that, for the on-going study in question, we are in the midst of preparing the feasibility report, assimilating data, examining alternatives, and developing costs and benefits. A draft feasibility report has not been completed, much less undergone all of the aforementioned reviews. The allegations appear to be based around what the Corps intends to recommend. The Corps' recommendation is still almost a year away, and there is much outside input to be gathered, analyzed and incorporated into the decision making process.

Question. General Ballard, this is an interesting charge given the fact that the study is not complete and, I believe, you have more than a year to go before you expect to set forth your recommendations. Let me ask this question: Has there ever been an occasion where the Corps of Engineers has been told or ordered to change their recommendations or outcome of a completed study with or without a Chief's report? Could you give us the details of those instances, including who ordered the change and the justification for making the changes?

General Ballard. Certainly not that I am aware of.

Question. What is the current status of the Upper Mississippi Navigation Study? Has the Study's integrity been damaged to the point that the nearly $54 million spent to date will have been wasted?

General Ballard. We are continuing with the study. The impacts of the investigations or reviews should not appreciably affect the schedule or usefulness of the study. I assure you that when all the facts are in, the integrity of the Corps will be intact, and you will know that the trust you have traditionally placed in the Corps is well founded.

Question. What assurances can you give the Committee that the Study can be completed in a way that results in an unbiased recommendation?

General Ballard. I assure you that it will be, and the process guarantees that it will be.

CREDITS AND REIMBURSEMENTS

Question. For the past several years the Committee has been concerned with the growing use of credits and reimbursements as a way to initiate and perform work on a project. The last estimate the Committee has was that the Corps had executed agreements totaling over $800 million and had another $500 million under negotiations. General Ballard, have these estimates changed substantially over the past year?

General Ballard. The total of both executed and proposed credit and reimbursement agreements has grown only slightly to about $1.4 billion. We are closely monitoring the situation to identify projects that non-Federal sponsors desire to construct in this manner.

Question. Gentlemen, do you see an increasing trend to use this approach to funding projects, and does this concern you?

Dr. Westphal. There has been an increasing trend over the past few years for non-Federal sponsors to use credit and reimbursement agreements to undertake projects. We are concerned about the impacts such activities may have on the Corps of Engineers construction program.

Question. General Ballard, what impacts to the Civil Works program, and the Corps of Engineers would result from allowing non-Federal interests to perform work for credit or reimbursement or to advance funds for projects to a greater degree?

General Ballard. If many non-Federal sponsors of large projects elected to undertake their projects using credit or reimbursement procedures, the funding requirement for such cases could consume a large part of the Corps construction program. We are concerned about the adverse impact such a scenario would have on our Dis-

tricts. If the Corps became predominantly a grant agency, it would erode our ability to maintain a high level of technical expertise, in both our project management and engineering roles.

Question. Congress enacted legislation in the Energy and Water Act for fiscal year 2000 that placed limitations on the use of this type of project financing. Have there been any problems implementing the Congressional directions? Do you see any future issues or problems complying with these limitations?

Dr. Westphal. To date, there have been no problems implementing the Congressional directions. We do not foresee any problems with the credit or reimbursement limitations through fiscal year 2001. However, in fiscal year 2002 we estimate that local sponsors will seek credits and reimbursements subject to section 102 of the Energy and Water Development Appropriations Act that exceed the $50 million limit. We are working with the Office of Management and Budget to prioritize proposed work that is subject to section 102 and monitor the credit and reimbursement requirements so that we manage the program to not exceed the section 102 limits on a per project or fiscal year basis.

RECREATION MODERNIZATION PROGRAM

Question. The budget request for fiscal year 2001 includes $27 million to initiate the Recreation Modernization Program. I believe this is a new program with the objective of upgrading old, worn out and obsolete recreation facilities managed by the Corps of Engineers.

Can you give the Committee some idea of the deteriorated conditions at your recreation areas, and the level of annual visitation at your facilities?

Dr. Westphal. Most of the facilities at Corps managed recreation areas were constructed in the 1960s and 1970s. The combination of heavy use, lack of routine maintenance, and changes in visitor needs has caused significant deterioration of recreation facilities and the natural resource base at many of our lakes. Deteriorated conditions include antiquated facilities such as shower buildings, campsites, day use areas, shelters and playgrounds that were built 30 years ago and have been maintained with a "Band-Aid" maintenance program. These facilities have barely been kept functional, with no funds available to improve or replace as visitation has tripled and types of users have evolved. Restrooms are not large enough to accommodate the numbers of campers, and they have little or no ventilation, heat, or hot water. Many campsites have been lost to erosion and compaction from over-use. Electric service at Corps sites remains at 20 and 30 amps while the industry standard is now 50 to 100 amps. Most of the Corps sites were designed to accommodate tents and pop-ups trailers while most campers today are using 30 to 45-foot units that can't drive through the campgrounds, let alone fit on a campsite. Users today are asking for full hook-ups to include water, electricity, sewer, cable, and even Internet access, which the Corps 1960's vintage units are unable to provide.

Question. How does visitation at Corps Facilities compare with other Federal agencies?

Dr. Westphal. The Corps of Engineers is responsible for 4,340 recreation areas at 456 lakes in 42 states. These recreation areas host 380 million visitors annually. In terms of water-based recreation, the Corps is the Nation's number one provider. The Corps is second in overall visitation at 21 percent of the national total, with the Forest Service being first at 48 percent. But, an important part of this number is that the Corps manages only 2 percent of total Federal acres, yet its visitation is greater than the National Park Service, Bureau of Land Management, Fish and Wildlife Service, and the Bureau of Reclamation. One in ten Americans visits a Corps lake each year.

EXAMPLES OF PROPOSED WORK

Question. What types of problems will be addressed with this funding?

Dr. Westphal. Generally, all of the inadequacies just mentioned will be addressed. We will not only repair the broken and worn out facilities, but will also modernize the facilities to meet the "new customers" of this era.

More specifically, a good example would be recommended work at Pool Knobs Recreation Area within the J. Percy Priest Lake project in Tennessee. Reflecting the nature of current unacceptable conditions, corrective measures at Pool Knobs Recreation Area will include: (a) replacement of asbestos roof tiles with a new roof, (b) reworking 45 campsites to allow greater spur length and provide modern hookup zones with less erosion, (c) providing some sites free of barriers to the handicapped, (d) stabilizing the shoreline, (e) reworking entrance registration and security measures and (f) renovating playground and beach areas. The total estimated cost of the rehabilitation and modernization is estimated at $660,000.

Other repairs and modernization recommendations common to many other sites include: (a) replacement or updating of toilet/shower buildings, (b) replacing deteriorating walks, steps and access ways, (c) providing safe access walkways to restrooms, (d) updating water, sewer, electric and phone utilities, (e) renovating the sanitary dump stations, (f) replacing sand filters at water treatment plants, (g) installing trash collection stations, sodding and seeding to stabilize eroded and impacted zones, (h) improving access road systems and parking areas to alleviate unsafe driving conditions and constant congestion, (i) renovating severely deteriorated interior drainage, (j) renovating boat launching areas, (k) enlarging picnic shelters and (l) providing amphitheater, walking trail, fishing piers, fish cleaning stations, bulletin boards and road signs.

FUNDING PRIORITIES AND SCHEDULE

Question. What is the level of the backlog of improvements needed?

Dr. Westphal. Of the 4,340 recreation areas at Corps projects nationwide, the Corps manages 2,389 of them. Currently, 1,000 areas are in need of modernization. The proposed five-year program will provide for completion of 225 of those areas most in need of modernization at a total estimated cost of $330 million.

Question. Does the Corps have a plan in place which identifies the most critical work to be undertaken first?

Dr. Westphal. Each division, district, and field project stands ready with prioritized lists of work needing to be done. Obviously, their attention is drawn to those situations where public safety, sanitation, overcrowding and environmental impacts are major factors. Currently the Corps is are developing standards for facilities and levels of service which will be used in a formal evaluation and selection process to ensure the most efficient and effective use of these funds. Of the recommendations submitted to the Corps Headquarters, selection criteria for sites to be included in the first year of implementation are as follows: (a) Addresses customer feedback/needs. (b) Projects positive impact on fee collections. (c) Projects positive impact on long term operation and maintenance. (d) Corrects environmental shortfalls. (e) Takes advantage of consolidation opportunities. (f) Provides accessibility for persons with disabilities. (g) Executes plan, and potential/contractual tools exist or can be developed to execute modernization activities quickly.

Question. Have you developed an annual funding profile through completion? If so, please provide it for the record.

Dr. Westphal. Mr. Chairman, I will provide that information for the record.

[The information follows:]

RECREATION MODERNIZATION FUNDING PROFILE

The proposed five-year program will provide for completion of 225 areas most in need of modernization, at a total estimated cost of $330 million. The proposed funding profile to complete the modernization program, subject to change due to future budgetary decisions, is as follows:

[In millions of dollars]

Fiscal year	*Estimate*
2001	27
2002	63
2003	80
2004	80
2005	80

ECOSYSTEM RESTORATION AND FLOOD HAZARD MITIGATION PROGRAM

Question. The budget request also proposed initial funding of $20 million for the Riverine Ecosystem Restoration and Flood Hazard Mitigation program. The Administration has been trying to get the program funded over the past several years, but Congress provided program authorization only last year. Can you describe the need for this program?

Dr. Westphal. Despite all of our efforts to reduce flood damages, there are still many communities susceptible to flood damage. Recognizing the significant role of natural floodplains in ameliorating flood peaks and thus damages, this program provides the opportunity to take a more holistic approach to the problem. In particular, it is hoped that in areas where relocation was not economically justified on its own that in combination with ecosystem restoration, projects may be implemented. It also provides a mechanism through which we hope to achieve results in a somewhat shorter time frame than through the traditional study and project authorization process.

Question. How will the funding requested for fiscal year 2001 be utilized.

Dr. Westphal. The funding requested for fiscal year 2001 will primarily be utilized for studies, however it is possible that some projects may reach the design or even the construction phase during the year.

Question. Are there specific projects to which the funding will be allocated, if so, can you provide a list for the record which shows how the proposed Finding will be allocated?

Dr. Westphal. Specific studies and projects to be funded have not yet been identified. We are still working on the eligibility and ranking criteria that will be used to select studies and projects for participation in the program.

Question. The justification supporting the funding request for fiscal year 2001 seems to limit consideration of these funds to non-structural projects. Is this true, and, if so, why? Doesn't the program authorization provide authorization of structural projects as well?

Dr. Westphal. While the justification supporting the funding request failed to mention structural flood control, this was not meant to imply that structural flood control features would be excluded from consideration since as noted, the authorization does allow structural projects. However, in accordance with the language of Section 212(b)(3) we would expect the studies and projects to emphasize, to the maximum extent practicable and appropriate, nonstructural approaches to preventing or reducing flood damages.

Question. Will the program be managed similar to other Continuing Authority Programs?

Dr. Westphal. With the full funding limit and requirement to notify the committees and in some cases obtain a resolution prior to implementation of these projects, the program management will likely be something of a hybrid between the processes used for specifically authorized projects and other Continuing Authority Programs.

Question. What are the Corps' plans to develop criteria and procedures under which proposals will be selected?

Dr. Westphal. Corps staff is working with my staff to develop a draft list of rating criteria that will be coordinated with state and local agencies and tribes prior to submission to the committees. Additionally the process of drafting policies and procedures for implementing this program has been initiated and the Corps plans to have them in place prior to receipt of program funding.

FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM (FUSRAP)

Question. Bring the Committee up to date on the Corps progress in cleaning up former sites under the FUSRAP program. How did your performance compare to the work schedules planned for fiscal year 1999 and how are you progressing with work planned for fiscal year 2000?

General Ballard. Our overall execution of FUSRAP since October 1997 has been excellent. All of the $140 million appropriated, both in fiscal year 1998 and in fiscal year 1999, was expended and over 80 percent of our expenditures in fiscal year 1999 were used for actual remedial activities, including the removal, shipment and disposal off-site of FUSRAP materials. In addition, the Corps completed remediation at two sites during fiscal year 1999, the Ashland 2, Tonawanda, New York site and the Bliss and Laughlin, Buffalo, New York site. At all except two sites, scheduled work was completed with only minor schedule adjustments. The two exceptions were the Painesville, Ohio and the Ashland 2 sites. Remediation at the Painesville site was not completed as scheduled due to increased quantities of material to be remediated. We are now doing additional site characterization at Painesville and preparing a revised cleanup plan. At Ashland 2, a substantial increase in quantities of soil requiring remediation caused a delay in completing remediation and in initiating remediation at the Ashland 1 site. This delay will not have a significant impact on the completion schedule at Ashland 1.

Total program execution to date in fiscal year 2000 is well ahead of work scheduled. Initiation of soils remediation at the Linde, Tonawanda, New York site, under a Record of Decision (ROD) has been delayed to permit the Corps to address concerns regarding the level of cleanup that were raised by the state. The Linde ROD was signed in March 2000. As a result of this delay in finalizing the ROD, we anticipate there may be some minor delays in the remediation schedule at Linde during fiscal year 2000. In addition, remediation of the commercial/industrial properties at the Maywood, New Jersey site, which was scheduled to be initiated in fiscal year 2000, has been delayed while the Corps resolves issues pertaining to Nuclear Regulatory Commission licensed storage pits at Maywood. Remediation of the commercial/industrial properties is now scheduled for initiation in fiscal year 2001. With

funds available from the slippage at the Maywood site, we will accelerate cleanup at other sites.

Question. How many sites are in the program? I believe you have indicated that you could complete 16 sites by 2002, is that correct? Does the budget request of $140 million support this schedule? If not, please explain.

General Ballard. The Department of Energy (DOE) designated 46 FUSRAP sites. The DOE had completed remedial activities at 25 of these sites at the time responsibility for executing FUSRAP was transferred to the Corps in October 1997. Our testimony that the Corps could complete 16 sites of the remaining 21 sites by 2002 was predicated on receipt of an annual appropriation necessary for program execution at an optimum level of effort. However, the funding actually provided in the fiscal year 2000 Energy and Water Development Appropriations Act, as well as the amount budgeted for fiscal year 2001 fall short of that required to support an optimum schedule. As a result it is no longer feasible to complete 16 sites by fiscal year 2002.

Question. What will it take to complete the remaining sites after 2002 and over what period of time? What is OMB's 5-year funding projection for the FUSRAP program?

General Ballard. At current funding levels, with the remaining requirement adjusted for anticipated cost growth but not adjusted for items not previously included in the Corps cost estimates, such as potential new sites referred to the Corps by the Department of Energy (DOE), it is estimated it will take until 2010 to complete remedial activities and require $1.2 billion. At current funding levels, without factoring in the possible impact of potential new sites referred by DOE, the Corps will complete 12 sites by 2002, and 4 additional sites by 2007.

OMB's 5-year funding projection for FUSRAP provides $140 million annually in new budget authority, adjusted for inflation starting with fiscal year 2003. It also reflects estimated offsetting collections of $10 million annually, adjusted for inflation starting in fiscal year 2003. The Corps has received and anticipates receiving $10 million annually, fiscal year 1999-fiscal year 2001, offsetting collections from the potentially responsible party (PRP) settlement negotiated with the W.R. Grace Corporation for use at the Wayne, New Jersey site. While the Corps continues with PRP activities at several FUSRAP sites, we have no expectation that additional PRP funds will be available in fiscal year 2002 or thereafter to supplement new budget authority. The PRP process can be protracted, and its outcome uncertain.

Question. Why does the justification material continue to indicate that schedules to complete site remediation are still being determined?

General Ballard. Out-year program ceilings had not been established at the time the justification material was being prepared; consequently, completion dates could not be determined.

Question. Do you expect any problems in turning the Ashland #2 site to DOE for long term maintenance? Are there any issues in this regard that the Committee should be aware of?

General Ballard. The Corps does not anticipate any problems in turning the Ashland #2 site over to the Department of Energy for long term maintenance. The Record of Decision (ROD) for Ashland 2 also includes the Ashland 1 site and a small area within the boundaries of the Seaway Landfill, Area D. The Corps will wait until the remediation of Ashland 1 and Seaway D are completed before starting the 2-year short term surveillance and maintenance clock at the Ashland 2 site.

ADMINISTRATIVE APPEALS PROCESS

Question. Public Law 106–60, the Energy and Water Development Act for fiscal year 2000 directs that $5 million be used to fully implement an administrative appeals process including a single level appeal of jurisdictional determinations. Has this process been implemented as directed? If not, why?

General Van Winkle. We expect to publish the final regulation by the end of March. It will implement the full appeals process, including appeal of jurisdictional determinations. We implemented the appeal of permit denials in fiscal year 1999.

REGULATORY PROGRAM STUDIES

Question. The budget request for fiscal year 2001 includes an increase of $3 million over fiscal year 2000 for further development of specialized tools and studies to manage the aquatic environment in sensitive areas. Can you be more specific in describing what these tools and studies consist of and why they are needed? Also, how much has been spent over the last several years in this area, and specifically how the $3 million requested for fiscal year 2001 will be allocated?

General Van Winkle. The Corps of Engineers has, for many years, conducted studies of watersheds where they involved high-value aquatic ecosystems and substantial pressure for development. These studies include watershed studies, Special Area Management Plans, or SAMPs, and similar efforts. Examples of substantial efforts include the SAMP for the City of Anchorage, Alaska, conducted in the late 1980s; a SAMP for wetlands west of Miami, called the Bird Drive Basin, completed in the mid 1990s; and studies of the vernal pools in central California's Santa Rosa Plain, conducted in the late 1990s. In each of these cases, the Corps, in cooperation with State, local and Federal agencies, studied the functions and values of aquatic ecosystems in the geographic areas, then worked toward issuing regional general permits for development in some of the moderate to lower value aquatic areas. The higher value aquatic ecosystems can be identified, mapped, and generally avoided or subjected to critical and comprehensive evaluation by the Corps if development is proposed. The advantage of this approach is that moderate to lower value aquatic ecosystems can be subjected to streamlined authorization by regional general permits and mitigation to improve degraded or lost portions of the aquatic ecosystems in watershed areas.

The results of watershed studies allow more predictability for the regulated public and better, more focused protection of the aquatic environment. A substantial study will cost up to $1 million over several years. A more modest effort may cost $20,000 to $100,000. Over the last three years, we estimate that the total amount spent on these kinds of studies averaged less than $1 million per year, primarily due to funding limitations. A number of our districts have a need for these kind of studies in fiscal year 2001. However, due to the projected workload impacts of the replacement nationwide permits, we will have to do some careful prioritizing of program requirements. We may have to reprogram funds from these studies, as well as from other areas of the program, to handle the increase in individual permit applications.

Question. The budget justification implies that these studies help reduce the workload for the Corps and reduce duplication for the regulated public. Specifically, how do these studies accomplish this outcome?

General Van Winkle. Watershed-type studies provide more predictability for the regulated public by identifying the portions of the aquatic environment that have higher aquatic functions and values, as well as those with lower aquatic functions and values. Someone in the regulated community can make more informed decisions about future development by knowing the geographic areas in which the Corps will have greater concerns for impacts to the aquatic environment. The studies ultimately reduce Corps workload in the Regulatory Program by streamlining regulation in the area studied. Specifically, the Corps issues regional general permits for development in lower-value aquatic environment. These regional general permits typically specify mitigation measures that will help improve the watershed over time. Therefore, the process is expedited because general permits require less evaluation to authorize activities and mitigation measures are already identified.

COMPREHENSIVE RIVER BASIN STUDIES

Question. The budget request for fiscal year 2001 includes funding to initiate four new comprehensive river basin studies. It is estimated that the studies will take 4 years and $2 million to complete. These studies, as I understand, are interagency efforts to address a host of water resource needs and issues in a particular river basin.

Why are you requesting funding for comprehensive basins studies? Given the large and diverse interests in some of these river basins, how will you control the process so that one or a small group of interests don't inappropriately impact the outcome and pace of the study effort?

Dr. Westphal. In an effort to be responsive to the national needs, the Corps is broadening the scope of Civil Works planning to address watershed issues and comprehensive impacts of multiple development decisions. These studies will address not only impacts of particular infrastructure projects, but also the impacts of permit decisions and non-Federal development plans. The other Federal agencies and state and local agencies involved would provide in-kind services to finance their own participation in the study. By calling on the expertise of interested Federal, state and local agencies to participate in these river basin studies, we will create a synergistic process through which the Army Civil Works program can make a major contribution. Study costs and schedules will be controlled using the recently developed Corps of Engineers automation and management procedures. We will leverage the responsibilities of the respective participants for the future benefit of the region and the wise use, development, preservation and conservation of the water and related land resources.

Question. In your view, what are the benefits to undertaking a comprehensive basin study? What criteria were used in selection the four basin studies included in the fiscal year 2001 budget request?

Dr. Westphal. We are now enjoying the economic benefits reaped from the wisdom and foresight of our predecessors who provided a strong federal role in national water resources development and management. Future generations will rely on our vision to maintain and improve the quality of life for them. Initiating studies of water resources needs for river basins or regions of the United States signals a return to proactive participation to address the future needs of the Nation. The difficult selection of these studies was based upon the existence of authorizations, the complexity of the watershed challenges, and the overall strength of the case presented in the new start justification sheets.

Question. Now, your budget indicates that these studies are expected to cost $2 million. My experience is that these types of studies take a long time and cost much more than the $2 million dollar Federal cost put forth in your budget justification. How confident are you that these studies can be completed for $2 million?

Dr. Westphal. Mr. Chairman, we do not intend these to be replicas of the long, drawn-out watershed studies of the past. Our proposal is to engage with States, local entities and other Federal agencies to take a watershed-based look at the complex interrelationship of the problems and opportunities for resource development and restorations. These studies are not intended to be decision documents in themselves. However, we fully expect comprehensive basin studies to identify numerous water resource problems and opportunities. If these turn out to be appropriate projects for the Civil Works program, the Corps would propose in-depth studies through our normal cost-shared feasibility process.

RIO GRANDE RIVER BASIN COMPREHENSIVE STUDY

Question. Specifically, as it relates to the Rio Grande River Basin Comprehensive Study, how will the Corps of Engineers be able to manage the study schedule given the diverse interests in the basin which runs from Colorado into Mexico?

Dr. Westphal. In cooperation with our local sponsors, the Corps will integrate the concerns of the various basin interests in a comprehensive study scope and apply Corps project management procedures to the ultimate benefit of all stakeholders. Communication and coordination will be key. In addition to an intensive public outreach program, the Corps will conduct periodic focus group sessions with local agencies, non-governmental interests and the general public including our local sponsor and other interests on the multidisciplined study team.

Question. What is the objective of the Rio Grande River Basin Comprehensive study?

Dr. Westphal. The objective of the Rio Grande Comprehensive Study, in cooperation with others, is to evaluate current conditions and make recommendations for improving water management on the Rio Grande in order to improve environmental quality, prevent flooding, and protect the water deliveries required by the Rio Grande Compact and international treaty obligations.

Question. Does the State of New Mexico support this effort?

Dr. Westphal. Yes, the Corps is currently engaged in dialogue with the New Mexico Interstate Stream Commission concerning their involvement in this study as the local cost sharing sponsor.

Question. Your budget justification indicates that the Study will be closely coordinated by the Consortium of the Rio Grande in accordance with the Memorandum of Agreement signed with federal agencies and the CoRio as part of the American Heritage Rivers Initiative. Who makes up the Consortium of the Rio Grande?

Dr. Westphal. Members include Federal and local interests who have chosen to work cooperatively based upon the designation of the Rio Grande as an American Heritage River.

Question. Who are the signatories of the Memorandum of Agreement?

Dr. Westphal. The following are signatories of the Memorandum of Agreement: Ty Fain, General Secretary of the Consortium of the Rio Grande, Inc.; Representative Silvestre Reyes; Representative Ciro Rodriguez; U.S. Army Corps of Engineers; U.S. Department of Agriculture; U.S. Department of Commerce; Environmental Protection Agency; Housing and Urban Development; U.S. Department of Interior; NASA; Department of Health and Human Services; Department of Energy; U.S. Department of Education; International Boundary and Water Commission; Mayor of El Paso; and Mayor of Laredo; Mayor of Brownsville.

Question. Was this Agreement coordinated with the State of New Mexico?

Dr. Westphal. I have been informed the Agreement was not coordinated with the State of New Mexico.

Question. I understand that the Study is to be cost shared on a 75 percent Federal-25 non-Federal basis. Have any of the state of Colorado, Texas or New Mexico agreed to share the Study cost?

Dr. Westphal. To date, the Corps has not received a commitment from any of the states to cost share this study. However, the Corps has been working with the State of New Mexico to establish its support.

Question. Given the fact that a non-Federal cost share will be required, how does the Corps of Engineers plan to control and limit the costs of this effort?

Dr. Westphal. The Corps is currently working with the State of New Mexico to develop a scope of activities and a funding schedule which will more clearly define the criteria on which decisions are made within existing agreements such as Rio Grande Compact and international treaty requirements.

Question. Is it the Corps of Engineers' position that no additional work should be undertaken in the basin until this comprehensive study is completed?

Dr. Westphal. No, Sir. Though we see the need for a comprehensive approach to Rio Grande watershed management, there are critical ongoing studies and projects which should proceed.

Question. What assurances can you give that this study will not adversely impact New Mexico water law, and the State's entitlement and use of Rio Grande River water?

Dr. Westphal. Mr. Chairman, we are extremely sensitive to the issue of state water law. I understand the Interstate Stream Commission, as the most probable local sponsor of studies under this authority within the State of New Mexico, would be interested in using this study to develop data and analyses which would assure adherence with New Mexico water law. Furthermore, the Army remains, as always, committed to supporting and preserving all provisions of the Rio Grande Compact.

Question. Why shouldn't New Mexico evaluate the competing needs for water within New Mexico instead of submitting to this international, multi-national effort?

Dr. Westphal. There are some very complex issues in this area. Diverse intrastate interests will influence the study direction significantly. However, those interests simultaneously recognize the need to mesh local concerns with interstate and international agreements. Addressing local needs in the larger forum will provide New Mexico additional opportunities to articulate the state's water requirements.

ESPANOLA VALLEY, RIO GRANDE AND TRIBUTARIES STUDY

Question. Funding was added to the fiscal year 2000 budget based on the City of Espanola expressing support for resumption of the Study and its willingness to cost share the feasibility phase studies on a 50–50 basis. Do you expect any problems with the City providing its cost share as was the case in past years?

General Ballard. The problem in past years was not funding but the inability of the City and Santa Clara Pueblo agreeing on the use of the necessary right-of-way for the project. However, now there is a concern that the City will be unable to provide funding to cost share the study. Previous assistance from the State may no longer be available.

Question. I note that the budget justification shows only $24,000 remaining after fiscal year 2001 to complete the feasibility stage of the study. Does the Corps have the capability to complete this work in fiscal year 2001?

General Ballard. The budget request of $50,000 in fiscal year 2001 and a follow-on funding of $24,000 in fiscal year 2002 reflects a basic level of effort due to the uncertainty of not executing the Feasibility Cost Sharing Agreement as scheduled. The Corps does not have the capability to complete this study in fiscal year 2001. The study will be a multi-year effort based on sponsor requested changes since the completion of the 1995 draft feasibility report.

Question. If so how much would be needed?

General Ballard. If the Feasibility Cost Sharing Agreement is executed as scheduled in fiscal year 2000, it is estimated that funds of $200,000 could be used to continue the feasibility study in fiscal year 2001.

ACEQUIAS IRRIGATION SYSTEM

Question. As you are aware, there have been problems in the past in developing and finalizing cost sharing agreements of the Acequias Irrigation System project. Have the cost sharing agreement problems been resolved?

General Ballard. Yes, Sir. The State of New Mexico has established a new procedure to resolve these problems by prioritizing projects for rehabilitation. This enables the State to select and prioritize qualified participants early in the process and avoid delay during project implementation.

Question. Are there any issues and problems with the State or other non-Federal entity providing their portion of the non-Federal cost?

General Ballard. State legislation was proposed in fiscal year 2001 limiting annual state expenditures per project to $250,000. This would jeopardize local funding for larger projects and lengthen construction duration. Although the bill was not enacted, further discussion is expected in the upcoming special session of the State legislature.

Question. What is the Corps capability on the project in fiscal year 2001?

General Ballard. The Corps capability of $900,000 is the same as our budget request.

ALAMOGORDO FLOOD CONTROL SYSTEM

Question. The budget request includes $3 million to continue work on the Alamogordo flood control project in New Mexico. Why doesn't the budget justification show an estimated completion date to the project?

General Ballard. Completion dates were listed as "being determined" because program ceilings beyond fiscal year 2001 were not available when justification materials were finalized. Because of this, outyear schedules could not be established in time to be reflected in the budget justifications, although the schedules are now available.

Question. Has the completion schedule changed from the date anticipated by the appropriation for fiscal year 2000 and, if so, why?

General Ballard. The completion schedule of September 2009 is the same as presented to Congress last year.

Question. What is the Corps capability to continue construction in fiscal year 2001?

General Ballard. The Corps capability for fiscal year 2001 is $3 million, the same as the budget request.

LAS CRUCES

Question. The budget request for fiscal year 2000 included $2.4 million to complete the Las Cruces, New Mexico flood control project. Yet I note that the budget request for fiscal year 2001 includes an additional $2.841 million to again complete the project. Why won't the project be completed as scheduled?

General Ballard. Additional time was required for acquisition of real estate and to incorporate design changes requested by the City of Las Cruces. Construction is now underway, but due to the delay, surplus funds were reprogrammed from the project.

Question. Do you expect any cost increases or other problems that would prevent you from completing the project in fiscal year 2001?

General Ballard. No, Sir.

RIO GRANDE FLOODWAY, SAN ACACIA TO BOSQUE DEL APACHE UNIT

Question. Can you explain why the effort on the Rio Grande Floodway, San Acacia to Bosque del Apache project continues at such a low level, particularly when construction was initiated in fiscal year 1992?

General Ballard. There are many diverse and competing interests for water in this area. Meeting our local sponsor's requirements while addressing various concerns from other interests has impacted design of the recommended plan. The listing of two new endangered species has also given rise to environmental issues not considered during project formulation.

Question. What is the 5-year budget profile for this project?

General Ballard. The 5-year program, subject to change as a result of future budget decisions, is listed below:

Fiscal year	
2001	$600,000
2002	4,500,000
2003	8,300,000
2004	7,000,000
2005	5,600,000

Question. What is the Corps fiscal year 2001 construction capability?

General Ballard. Although our fiscal year 2001 capability is $600,000, the same as the budget request, physical construction would not be initiated until project issues have been resolved.

QUESTIONS SUBMITTED BY SENATOR THAD COCHRAN

CORPS OF ENGINEERS FINANCE CENTER

Question. Mr. Secretary, would you please explain the proposed capitalization of the Corps of Engineers Finance Center by the Defense Finance and Accounting Service and the impact that it would have on the Corps and it contractors?

Answer. DFAS has proposed to capitalize the operating finance & accounting functions performed by the Corps of Engineers Finance Center (UFC) in Millington, Tennessee, on June 30, 2000, as one of the final actions under Defense Management Review Directive 910. With the capitalization, DFAS would assume all finance and accounting operation functions including disbursements performed by the UFC. Under this scenario, the UFC would become a DFAS operating location (OPLOC) reporting to DFAS, Indianapolis.

The Army has worked closely with DFAS to review the savings already achieved by the Corps in its consolidation of its nationwide financial actions into the UFC and to identify any additional savings that might be realized by capitalizing the UFC into DFAS. The Army has noted to DFAS the unique nature of the Corps Civil Works and Support for Others financial actions and has expressed concerns about potential impacts on accuracy, timeliness and integrity of the financial data and timeliness of payments to contractors.

Question. Would it have any impact on the Corps' ability to respond to emergencies?

Answer. The Army and DFAS would make certain before any such capitalization occurs that the Corps emergency response capability, specifically the ability to procure/contract for goods and services very rapidly and to pay for those goods and services upon receipt, would not be compromised.

Question. What impact could it have on the current workforce and service?

Answer. There are about 300 hundred Corps of Engineers employees currently performing the functions which would be capitalized. These positions would become part of DFAS. Any future actions affecting these positions would be within the purview of DFAS, rather than the Corps.

Question. How would the proposal impact local sponsors, which cost share most Corps projects?

Answer. The Army has expressed to DFAS concerns that such a capitalization has the potential to increase costs, which would affect non-Federal sponsors as well as the Federal Government.

QUESTIONS SUBMITTED BY SENATOR SLADE GORTON

TIMEFRAME FOR PREFERRED ALTERNATIVE

Question. Two weeks ago I met with General Carl Strock in my office regarding the status of the Corps' EIS. He advised at that time that the Corps may be issuing a (preferred alternative(on whether to breach the Snake River dams this fall. Can you specify a more precise timeframe as to when the Corps intends to release this information, and whether the public will have an opportunity to comment on it before it becomes final? What additional information, if any, will the Corps incorporate into its final decision?

Dr. Westphal. There are a number of factors that make it difficult to precisely determine when the Corps will identify a Preferred Alternative. For example, the Corps must analyze all the comments received during the public review period. Therefore, the schedule is a function of the number and the complexity of the comments. To date we have received over 40,000 comments and we fully expect that the final number will be in the range of 100,000. We have granted the requested 30 day extension of the public comment period until April 30. This will delay completion of the Final EIS. Additionally, the National Marine Fisheries Service (NMFS) is expected to release a Biological Opinion for the operation of the Federal Columbia River Power System this summer, which could significantly effect future actions for the lower Snake River dams. Although we considered preparing a Revised Draft Environmental Impact Statement with a preferred alternative, the current plan is to proceed directly to a Final EIS unless new information is received that would dictate otherwise. In either event, the public will have an opportunity to review the proposed federal action before a Record of Decision is prepared. It is anticipated that the document will be available for public review late this fall.

It is our intent to use the best available information. New information arising from public and agency comments will be used in our decision process.

SNAKE RIVER PREDICTED CHINOOK RUNS VS. COLUMBIA RIVER

Question. Can you provide an estimate as to whether the natural runs for spring and summer chinook salmon in the Snake River will increase or decrease this year? How will the Snake River salmon runs compare this year to the runs on the Columbia? If the runs on the Snake River are improved from last year, will this new information be factored in on any additional feasibility studies?

Dr. Westphal. The spring and summer chinook salmon adult returns to both the Snake and Columbia rivers are expected to be higher this year than in 1999. That includes both the hatchery and naturally-produced fish. All available scientific information will be factored into the feasibility studies; however, I must caution that the Summer of 2000 adult returns are only estimates at this time, based on the jack returns in 1999, and subject to revision as the runs progress. Jacks are juvenile salmon that return a year early and serve as a predictor of the returns for the following year. There are natural fluctuations in salmon returns from year to year. Despite the encouraging returns for 2000, the National Marine Fisheries Service's modeling analyses (CRI) show that long term population trends indicate a decline for these salmon stocks.

COMPARISON TO UPPER SNAKE RIVER DAMS

Question. Your draft EIS states that you have a very high rate of survival for juvenile and adult salmon through all four of the Snake River projects. I am assuming that some of this success may be attributed to the fish passage improvements at Ice Harbor, Lower Monumental, Little Goose, and Lower Granite Dams over the past few years. Isn't it true that no fall chinook may pass through on any of the dams further upstream on the Snake River because they have no such improvements?

Dr. Westphal. That is correct. The Hells Canyon Project, which is the next complex of dams on the Snake River above Lower Granite Project, is made up of three dams: Hells Canyon, Oxbow and Brownlee. These projects, owned by Idaho Power Company, do not include passage facilities for either adult or juvenile salmon. All salmon and steelhead runs into Idaho above the Hells Canyon complex have been eliminated.

DELAYED MORTALITY OF SALMON THROUGH DAMS

Question. Will any additional scientific data be used in a final Corps EIS to explain the delayed mortality of salmon, which the Corps acknowledges in its draft EIS? Which agencies will the Corps be coordinating with to get this information?

Dr. Westphal. The Corps has relied, and will continue to rely, on the National Marine Fisheries Service (NMFS) as the Federal biologist on anadromous fish issues. The short answer to your question is no. We do not anticipate that there will be additional scientific data available for the Final EIS on delayed mortality. NMFS has indicated that ". . . the extent to which transported fish suffer differential delayed mortality is a crucial question because the answer strongly influences the possible advantage to be accrued by dam drawdown [breaching]. Ongoing direct experiments that contrast the return rates of tagged fish that pass through the hydrosystem versus the return rates of transported fish can resolve this question in a clear and unambiguous manner. It will, however, require several years to obtain sufficient data because sample sizes of recaptured returning fish are typically low, the magnitude of differential delayed transportation mortality may vary with climate, and measurements from only a few years may fail to capture extreme values that could have important ecological effects."

CASPIAN TERNS

Question. The Corps issued an Environmental Assessment in January, which reveals that some 1,200 terns were moved from Rice Island, and about 77 percent of the salmon population in that area was recovered. We understand that the Corps has an even more aggressive plan to remove terns this year. Will this information be incorporated into the Corps' final EIS?

Dr. Westphal. The Portland District is proceeding with the Caspian Tern fiscal year 2000 Management Plan, which includes preventing Caspian Terns from nesting on Rice Island, Miller Sands Spit and Pillar Rock for the 2000 nesting season. Last year, 8,100 pairs nested on Rice Island while 1,400 pairs nested on prepared habitat on East Sand Island. Research indicated that in 1998 the Caspian Tern colony on Rice Island consumed between 7.7 percent (7.4 million) to 15.8 percent (10.8 million) of the estimated 96.6 million salmonid smolts that reached the Columbia

River estuary. The best estimate of smolts consumed by the terns is 11.2 percent (10.8 million).

Analysis of Caspian Tern diets from the 1999 pilot project indicates that the consumption of salmonids by terns nesting at East Sand Island was 44 percent of their diet versus 75 percent of that of terns continuing to nest at Rice Island. Consequently, we expect that the avian management actions to be implemented this year will result in a significant reduction in juvenile salmonid loss due to bird predation. We are looking to the U.S. Fish and Wildlife Service to describe a long-term management plan for the terns with the hope that areas outside the Columbia River estuary can be found for the bird colony.

We will continue to look at and include any new scientific information on bird predation that could affect study results in the final EIS. That includes the effect of predation on the juvenile fish and actions that could reduce predation.

OCEAN CLIMATE CHANGES & EIS

Question. Why hasn't the Corps incorporated information regarding the impact of ocean climate changes on the decline of salmon runs in its EIS? Are there any plans to use research in a final EIS?

Dr. Westphal. The Draft EIS does contain information on the ocean and climatic effects on salmon and steelhead. This information is referred to in a number of locations throughout the report, with the lengthiest discussion starting on page 5.4–62 and in Appendix A. As the primary study objective is to improve migration conditions through the lower Snake River, the study does not seek to develop a life-cycle recovery plan.

If more detailed information becomes available on ocean conditions and how it effects salmon populations, we will incorporate it into our Final EIS. The CRI analysis suggests ". . . survival of adults in the ocean is a key life history stage. Unfortunately, ocean conditions are little more than a black box for all salmonids, and there is a need for long-term research focused on the relationship between ocean conditions and salmonid population dynamics. This research will not help inform decisions over the next few years, but could help place population fluctuations in a broader context over the long term. So management actions might better respond to those threats that are best mitigation by non-ocean actions." Research efforts have recently begun on ocean conditions.

JOHN DAY DRAWDOWN STUDY

Question. I am concerned reports that the Oregon State Fish and Wildlife department may be questioning your analysis on the John Day Drawdown study, and is pressing the Corps to pursue further study of this issue. I do not believe that further study is warranted, nor will it lead to any additional information that will positively impact. Can you explain the Corps' position on the John Day drawdown and when we can expect a final decision?

General Ballard. As you know, the draft John Day report is out for public and agency review. Our preliminary recommendation is that no further study is required to allow Congress and the Region to make a decision regarding drawdown of the John Day reservoir or removal of the John Day Dam. We will evaluate all comments received during the review period, due to close on May 1, 2000, including those from the State of Oregon, before making our final recommendation to Congress.

We fully understand that diverse views regarding further study are prevalent throughout the region. Let me assure you that the Corps of Engineers will base its recommendation on the best science available. We anticipate completion of the Phase I report this summer. Our final recommendation to Congress will be made in late September of this year.

COLUMBIA RIVER CHANNEL DEEPENING

Question. As you know, I have strongly supported deepening the Columbia River navigation channel from 40 to 43 feet. It will enable the newer generation of cargo ships with their deeper drafts to serve the Columbia/Snake River system. Sustaining that service will allow thousands of businesses, farms, and ranches to continue to compete successfully in the world marketplace.

The Corps of Engineers issued a favorable Chief's Report on the project in late December, so it is fully authorized. Pre-construction Engineering and Design and land acquisition are underway and will be completed during fiscal year 2001. Some environmental features of the project, which are very important to its success in my part of the country, will be ready for construction in fiscal year 2000.

Unfortunately, because the Chief's Report was completed so late in the budget preparation cycle, construction funds for the Columbia River project could not be in-

cluded in the President's budget request. However, if Congress were to appropriate a small amount of construction funds [$4 million] for fiscal year 2001, would be Corps be capable of beginning construction of these environmental features during fiscal year 2001?

General Ballard. Yes, subject to the usual qualifications, the Corps of Engineers would be capable of initiating part of the environmental restoration component of the Columbia River Channel Improvements Project. This capability is dependent, however, upon the non-Federal sponsor's execution of their plan to acquire the lands necessary for construction.

Question. In addition, the National Marine Fisheries Service included a requirement that the Corps and local sponsors secure and improve 5,000 acres in the estuarian habitat as mitigation for the deepening project. What steps is the Corps taking to meet this requirement?

General Ballard. The Biological Opinion for the Columbia River Channel Deepening project clearly states in the terms and conditions that the Corps will, "as part of the Corps' ecosystem restoration mission and responsibility under separate authority, independent of the Channel Improvements Project, expedite the attainment of the objectives of the Lower Columbia River Estuary Program by restoring 1,500 acres of tidal wetlands by 2005, and 3,000 acres between 2005 and 2010, subject to Congressional authority and appropriation". Fiscal year 2002 funds for a new General Investigation (GI) study would be needed in order to fulfill this term and condition. This GI study would specifically address environmental restoration in support of the Lower Columbia Estuary Program. The restoration of habitat is not considered part of "mitigation for the deepening project".

Question. Although some mitigation measures were included in the Chief's Report, the number of acres involved will not meet the requirements established by NMFS. In what ways can the Corps use other authorities to work with the local sponsors to provide the habitat improvements required by NMFS?

General Ballard. The items included in the Chief's report include mitigation for impacts due to upland disposal impacts to wildlife. The items referred to in the Biological Opinion's terms and conditions relate to restoration actions. This is an important distinction. The Biological Opinion states that the Corps will, "as part of the Corps ecosystem restoration mission and responsibility under separate authority, independent of the Channel Improvement Project, expedite the attainment of the objectives of the Lower Columbia River Estuary Program by restoring 1,500 acres of tidal wetlands by 2005 and 3,000 acres between 2005 and 2010, subject to congressional authority and appropriation." The Corps intends to use a future General Investigation Study as a vehicle for evaluating and seeking authority to provide the habitat restoration. We will also use Section 1135, Project Modifications for Improvements to the Environment and Section 206, Aquatic Restoration, both part of our Continuing Authorities Program, for habitat restoration.

QUESTIONS SUBMITTED BY SENATOR HARRY REID

Question. Dr. Westphal, I sense a growing concern in this country regarding the state of our environmental infrastructure, that is, our water supply and distribution systems and sewage collection and treatment systems. We've correctly determined that much more needs to be done in the future to assure these systems are as modern and functional as possible, but our traditional process of assigning responsibility for this work mostly at the local government level, and our mechanisms for financing needed improvements have been found wanting. The Federal Government has imposed increasingly strict requirements on water supplies and discharges, realizing that water problems affect all of us, not just those within a given local political jurisdiction where a discharge, for example, might occur. These new standards are imposing great demands, however, on local governments. The demands are especially difficult for poor rural areas—and poor urban areas for that matter. Congress has taken a few steps in the right direction in recent Water Resources Development Acts by creating an opportunity for the Corps to bring its expertise to bear on the problem. I'm particularly interested in one of these provisions for rural Nevada and Montana contained in Section 595 of WRDA 99, but there are a host of others as well across the country, indicating to me that many of my colleagues have similar concerns. Despite your growing authorities to address these problems, you have not as yet budgeted for any of them. Why not? Don't you believe these needs are important?

Answer. Answered at hearing P. 36 LINE 22.

Question. Did you recommend to OMB that work under these authorities be funded?

Dr. Westphal. I recommended to OMB that several environmental infrastructure projects for which Congress had previously appropriated funds be included in the President's budget. My recommendation did not include work authorized by section 595 because I believed that ongoing activities had a better chance of being budgeted.

Question. General Ballard, does the Corps have the capability and expertise to address these problems?

General Ballard. Yes, we do.

EVERGLADES RESTORATION

Question. Dr. Westphal, The administration has placed a great deal on emphasis on restoration of the Florida Everglades. I too am in favor of this extensive environmental restoration. However, I am concerned about the cost and the potential impacts to other worthy projects within the Corps' annual budget. It is important to the Congress that the Corps' budget balance all of the various water resources needs of the nation. The extent of the financial commitment for the Everglades will put a tremendous strain on this balanced approach without significant increases in the Corps' budget in coming years. Dr. Westphal, Is the administration making provisions in the outyears to increase the Corps' budget targets to account for the tremendous increases necessary to fund the Everglades restoration?

Dr. Westphal. OMB's outyear projections for the Army Corps of Engineers and other agencies illustrate funding levels that would maintain roughly a constant level of total spending in real terms. The outyear levels do not represent a particular level of funding in any future year. We would expect the next Administration to consider an appropriate balance of funding for Everglades restoration and other worthy Corps projects and activities when it establishes budget targets for the Corps of Engineers.

Question. General Ballard, This tremendous amount of new work in Florida is likely to strain your staffing resources in the area. Assuming this work is funded at anticipated levels, how will the Corps undertake this additional work within current staffing levels?

General Ballard. We believe we should be able to accommodate the Everglades work within the overall Corps FTE allocation using a combination of Corps FTE personnel and Architect/Engineering contracts.

SHORE PROTECTION

Question. Dr. Westphal, Shore Protection projects, with very few exceptions, are conspicuously absent from the President's budget again this year. Congress, at the urging of the Administration, modified the cost sharing provisions for shore protection projects in WRDA 99. By making these changes, we expected some movement within the Administration to budget for these vital projects. Why has the Administration refused to budget for these projects despite the concessions by Congress on cost sharing issues?

Dr. Westphal. The fiscal year 2001 budget includes $55 million for shore protection projects, a $21 million (62 percent) increase over funding requested for these projects in the fiscal year 2000 budget. Although the Water Resources Development Act of 1999 increased the cost sharing for shore protection, the Administration's policy on shore protection projects remains unchanged from prior years, because the revision included by Congress did not go far enough in changing the cost sharing for periodic nourishment. The Administration proposed increasing the non-Federal share of periodic nourishment from 35 percent to 65 percent. WRDA 1999 increased the non-Federal cost share to 50 percent for shore protection projects for which a feasibility study is completed or for which the project is authorized after 31 December 1999. Thus the non-Federal cost share falls short of the level the Administration had desired and a great many projects would be totally exempted from the new cost sharing. I look forward to continuing to work with congress to reach agreement on this issue in the next Water Resources Development Act.

Question. Did you advocate to OMB that these projects should be budgeted?

Dr. Westphal. Yes, I supported funding each of these projects at the level recommended by our Divisions.

Question. Shoreside communities contribute billions of dollars to our national economy. These projects provide protection for these communities as well as providing recreation for the citizens of this country. Doesn't the Administration feel that jobs and tax dollars generated in these communities are worth preserving?

Dr. Westphal. Yes, however the Administration also believes that, in most instances, these communities can use some of the funds they generate to finance the shore protection they need. It is for this reason that the Administration is seeking higher cost sharing from the non-Federal sponsors for shore protection.

REGULATORY PROGRAM

Question. General Ballard, the Corps has recently proposed new wetland rules. In the past, I have been concerned over the length of time involved in securing Corps' permits. These new wetland rules will increase your workload tremendously. A comparison of your proposed Regulatory Program shows that you received $106 million in fiscal year 1999, $117 million in fiscal year 2000 and are requesting $125 million in fiscal year 2001. An increase of only $8 million for fiscal year 2001 does not seem adequate for the increase in workload that these new rules are likely to generate. Is your staff and budget adequate to respond to all of these new permit requests in a timely manner?

General Ballard. The fiscal year 2001 budget request was not developed to reflect workload generated by the nationwide permit changes since the request predates completion of our study of the nationwide impacts. However, we do anticipate that the fiscal year 2001 funding request increase, if approved, would partially address the individual permit workload but would not be adequate to maintain our current performance levels.

CONSTRUCTION BACKLOG

Question. Dr. Westphal, estimates range from $30 to $45 billion in backlogged water resources needs in this country. An administration budget of $4 billion is inadequate to fund these great needs. Congress has generally increased the budget somewhat in order to try to fund some of these needs, however, the Congress cannot increase the Corps' budget to the levels needed without some leadership from the Administration. As the senior Administration advocate for the Corps, how are you actively seeking to increase the Corps' share of the Federal dollar?

Dr. Westphal. I have actively worked within the Administration to educate others on the magnitude of water resources needs and their importance to the well being of the Nation. As you know there are many competing interests for the Federal dollar. The Administration's fiscal year 2001 budget request strongly supports investments in water resources, including $78 million for 14 new construction starts, $27 million for recreation modernization, and $20 million for the newly authorized Challenge 21 program. In fact, the Administration's fiscal year 2001 budget request of $4.064 billion is virtually equivalent to Congress' fiscal year 2000 appropriation of $4.113 billion. As long as I am Assistant Secretary, I intend to continue advocating greater priority for Civil Works funding to better address the Nation's water resources needs.

HARBOR SERVICES FUND AND FEE

Question. Dr. Westphal, the Committee is aware that the Supreme Court ruled a portion of the Harbor Maintenance Tax as unconstitutional. The Administration has proposed a Harbor Services Fund and Fee as a replacement for the Harbor Maintenance Trust Fund and Tax. What other options did the Administration consider in lieu of this fee?

Doctor Westphal. The Administration worked to develop a proposal that was economically and constitutionally supportable. Chiefly due to the Supreme Court decision and the General Agreement on Tariffs and Trade (GATT) concerns of some of our international trading partners, no other options were determined to be viable. The tax has been challenged by the European Union in the World Trade Organization as a violation of GATT. If the European Union ultimately prevails in a case, the tax would most likely have to be repealed in order to avoid damages. If Congress does not replace it with another financing mechanism, one that can withstand constitutional tests, then work programmed for port improvements and maintenance will have much stiffer competition from appropriations from other Federal programs and activities. A constrained budget will not support a program that will bring navigation improvements on line sooner and, probably, at less cost.

MAINTENANCE BACKLOG

Question. It is the Committee's understanding that there is a large backlog of critical maintenance at existing Corps projects. Could you please comment on this backlog, provide examples of the type of maintenance that is backlogged and the procedures used to prioritize and budget for this backlog.

General Ballard. The fiscal year 2001 maintenance backlog is around $451 million, equal to 24 percent of the $1.854 billion budget request for O&M. It covers all of our O&M business functions as follows: Navigation—$276 million, Flood Control—81 million, Hydropower—$30 million, Environmental Stewardship—$13 million and Recreation—$50 million. Some specific examples would include: (a) repair

spillway gate in the McNary Lock and Dam in Oregon, (b) dewater and perform major repairs at Port Allen Lock on the Gulf Intracoastal Waterway in Louisiana, (c) repair the South Beach Groin at Ventura Harbor in California; and (d) repair severe deterioration of existing riprap on Coyote Dam at Lake Mendicino in California.

Over the last year I have conducted intensive reviews with each division commander analyzing his O&M program from top to bottom. We have identified the highest priority maintenance backlog and have instituted aggressive programming measures to concentrate available resources on the most critical needs. In fiscal year 1999, the unexpended carryover was reduced by $110 million with a good portion of these funds applied toward the backlog. We continue to look for efficiencies in the O&M program with savings being applied toward helping to reduce the maintenance backlog to a manageable level.

QUESTIONS SUBMITTED BY SENATOR ROBERT C. BYRD

ROBERT C. BYRD LOCKS AND DAM, WEST VIRGINIA AND OHIO

Question. Please provide an estimate of the increased capability and the reduction in navigation delays since operations of the new locks commenced in January 1993. Please also provide an estimate of the navigation savings during this same time.

General Griffin. The capacity of the old Gallipolis locks was estimated to be 63.3 million tons. With the new R.C. Byrd locks, 15-barge tows typically can be processed in one operation rather than the two operations necessitated by the smaller Gallipolis locks. Transit times have been reduced from an average of 16 hours per tow to 1.5 hours per tow. The capacity of the new locks is estimated at 148.5 million tons.

Since the new locks opened in 1993, annual traffic has grown from 45 million tons to 56 million tons in 1999. In the first seven years of operation, the new locks have realized transportation savings of an estimated $227 million. The total project cost is $379 million. The incremental cost (over the without-project condition) is estimated at $263 million. Cumulative savings to date represent 86 percent of the incremental cost of the new locks. At present traffic levels, it is expected that the R.C. Byrd Locks and Dam project will pay for itself by 2001.

WINFIELD LOCKS AND DAM, WEST VIRGINIA

Question. Please provide an estimate of the increased capability and the reduction in navigation delays since operation of the new lock commenced in November 1997. Please also provide an estimate of the navigation savings during this same time.

General Griffin. The capacity of the old Winfield project was estimated at 24 million tons. With the new lock, typical five barge tows can be processed on one operation, rather than the five operations necessitated by the smaller locks. Processing times were reduced from about 170 minutes per tow to 64 minutes. The capacity of the new lock is estimated at 69.5 million tons.

Since the new lock opened, transit times through Winfield have been reduced by approximately 12.5 hours per tow and total lockages have reduced from over 22,000 to about 3,000. In the two years of operation, the new lock has realized an estimated $23 million in transportation savings. The cumulative savings represent 10 percent of the incremental cost of the new lock. The total cost of the project is estimated at $227.5 million. This total cost is also the incremental cost because there was no construction in the "without project" condition. The traffic forecast in the feasibility report tracks very well with actual traffic at Winfield. At forecast traffic levels, it is expected that Winfield lock will pay for itself by 2012.

BLUESTONE LAKE (DAM SAFETY ASSURANCE), WEST VIRGINIA

Question. Bluestone is a fifty-year-old dam on the New River just above Hinton and the confluence of the New and Greenbrier Rivers. The Huntington Corps of Engineers reports that the dam does not meet today's safety criteria. In fiscal year 2000, Congress provided $750,000, which was supplemented by a reprogramming of approximately $3.9 million, to initiate a new construction start on Phase I work on the Bluestone Dam Safety Project.

What work will be completed with the fiscal year 2000 funds?

General Griffin. Fiscal year 2000 funds will be used initiate construction of Phase 1, consisting of the resident engineer's office, penstocks extension, and mass concrete thrust blocks. Plans and specifications will be started for the second phase, which consists of a 13 foot pre-cast concrete wall, State Route 20 gate closure, and anchors.

Question. What risks are currently posed by the Bluestone Dam to the communities and businesses, and environments below the dam?

General Griffin. Under current design criteria, the probable maximum flood is estimated to overtop the existing dam by 13 feet. Dam failure would cause catastrophic flooding along the Greenbrier, New, Gauley, Kanawha, and Elk Rivers, including the metropolitan area and heavily industrialized capital city of Charleston, West Virginia. This would place more than 115,000 persons at risk, with property damages in excess of $6.5 billion. However, the probable maximum flood has a small likelihood of occurring in any given year.

Question. What level of flooding would cause the dam to fail catastrophically? How likely is it that such a level of flooding might occur? What is the likelihood that the dam will fail in the next 50 years? In the next 100 years?

General Griffin. The dam would be in danger of failing if pool levels approaching the top of the existing dam were to occur. This flood level, known as the 500 year flood event, has a 0.2 percent chance of occurring in any year, a 10 percent chance of occurring at least once in the next 50 years, and an 18 percent chance of occurring at least once in the next 100 years.

Question. Are there additional Corps capabilities for this project for fiscal year 2001 above those identified in the President's fiscal year 2001 budget?

General Griffin. Yes, subject to the usual qualification, the Corps has additional capability of $8.7 million above the President's Budget request of $6.3 million, for a total of $15 million. The capability-level funds would be used to complete engineering and design for the preferred alternative, complete phase 1 construction, and initiate phase 2 construction. Capability-level funds would advance overall project completion by one year.

Question. What additional measures can be taken to minimize the risks to the public and to ensure that this project remains on track and a high priority?

General Griffin. In order to reduce risk as early as possible in the project schedule, the project was separated into phases. The first phase includes modifications to the existing penstocks and construction of concrete thrust blocks. Construction of these features will improve stability of the dam and increase the discharge capacity of the dam during rare flood events.

GREENBRIER RIVER BASIN, WEST VIRGINIA

Question. The pristine Greenbrier River Basin of West Virginia is one prone to extensive flooding. The Water Resources Development Act of 1996 authorized the Corps to implement local protection plans to help mitigate damage from future flooding.

Has the Corps reached an agreement with the City of Marlinton on a local flood protection plan? Have the details of the plan been worked out and agreed to among the participants?

General Griffin. The Corps and the City of Marlinton have identified two plans of protection. Both include a levee down the front side of Marlinton that borders the Greenbrier River and a secondary levee along the Riverside area of town. One plan involves the extension of the levee upstream along Knapps Creek, and the other plan involves construction of a Knapps Creek diversion channel. The costs of the two plans currently are being evaluated.

Question. What is the projected non-Federal cost? What is the total cost?

General Griffin. The total cost of the least-cost plan is estimated to be not more than about $75 million. The local sponsor would qualify for a reduction in its cost share to 14 percent, based on ability-to-pay provisions. Therefore, the non-Federal share of the least-cost plan would be no more than about $10.5 million. However, if one plan proves to be more costly and the local sponsor prefers that plan, the local sponsor also would pay the full incremental costs of that plan.

Question. What activities are currently being conducted on the Marlinton local protection plan?

General Griffin. The Corps is finalizing design, conducting field investigations, and evaluating the feasibility of the two alternatives in the Knapps Creek area.

Question. What capabilities does the Corps anticipate for fiscal year 2001 for the Marlinton local protection plan?

General Griffin. Subject to the usual qualification, the fiscal year 2001 capability is $1.0 million. If provided, these funds would be used to continue detailed design and to complete the detailed project report and NEPA compliance.

Question. When can construction on the Marlinton project begin?

General Griffin. If funds are provided, construction could begin in fiscal year 2002 in a limited area.

Question. What is the status of the flood warning system for the Greenbrier River Basin? What benefits are anticipated or have been achieved already with its installation?

General Griffin. The flood warning system is complete and operational. Since installation was completed in Fall 1999, there has been no basin flooding that has required use of the system. The primary benefit of the flood warning system is that it provides advanced notification of impending flooding conditions. This additional warning time is beneficial to reduce flood damages and save lives.

Question. Have other localities, such as the cities of Ronceverte, Alderson, Durbin, Cass, Renick, which are authorized for flood damage reduction plans under the Water Resources Development Act of 1996, expressed interest in pursuing projects?

General Griffin. At this time, there are no other expressions of interest to pursue a project.

Question. Is the current authorization of $47 million as modified by section 360 of the Water Resources Development Act of 1999, for federal participation sufficient to complete the Marlinton project, factoring in inflation and possible future participation from other localities mentioned above in flood protection projects? What level would be sufficient?

General Griffin. The current authorization of $47 million is not sufficient to complete the Marlinton project and initiate work on other projects. The Federal share of the Marlinton project alone, including expected price level adjustments for inflation, is estimated to be $65 million. The Federal share of projects for other localities such as Ronceverte, Alderson, Cass, Durbin, and Renick would not be quantified until a definitive plan and schedule were established, but the total for the Greenbrier River Basin is likely to be well over $100 million.

MARMET LOCKS AND DAM, WEST VIRGINIA

Question. Congress provided $11,350,000 last year to advance engineering, design, and land acquisition for the Marmet Lock replacement project. The President's budget request is $6,500,000, which is far less than last year's enacted level and the $9,800,000 requested by the Administration.

Is the Marmet Lock replacement important to maintain and increase the efficient flow of commerce? How many tons of cargo, and what type of cargo, were shipped through the locks in 1999? Does the project have a strong benefit/cost ratio?

General Griffin. The Marmet lock replacement is essential to maintain and increase the flow of commerce. The locks move millions of tons of cargo to and from West Virginia. Improvements at Marmet would reduce the average transit time of 5.5 hours to around 1 hour, a reduction in lock transit time of 4.5 hours. At current traffic levels, the new lock would yield 23 thousand hours of reduced trip time for the 4,300 tows that used the project. In 1999, more than 14.7 million tons of commerce locked through Marmet, including 13.6 million tons of coal, 580 thousand tons of petroleum and chemical products, and 440 thousand tons of stone. The remaining benefit-to-cost ratio is 4.7 to 1.

Question. The President's budget request for the project is $6,500,000, which is far less than last year's enacted level of $11,350,000 and the Administration's fiscal year 2000 request of $9,800,000. Why has the Administration significantly reduced the fiscal year 2001 request as compared to fiscal year 2000 request? Does this project not warrant continued strong support and funding?

General Griffin. The fiscal year 2001 request reflects a constrained construction program Corps-wide. The President's budget reflects a reasonable schedule for continuation of real estate and design activities.

Question. Last year, the Corps estimated that it would need to buy about 250 properties for this project. How many have been purchased to date, and how many do you anticipate having purchased by the close of fiscal year 2000?

General Griffin. To date, 64 properties have been purchased. By the end of fiscal year 2000, approximately 100 properties will have been acquired.

Question. When do you anticipate that the land acquisition for the project will be completed? When do you anticipate that the land acquisition will be sufficiently far enough along that the Corps can begin construction?

General Griffin. The President's budget reflects that land acquisition will be completed by September 2002 and that sufficient land acquisition and design will be completed by the end of fiscal year 2001 to enable initiation of construction of the lock in fiscal year 2002.

Question. How much money will be needed beyond fiscal year 2001 to complete the project? What work will remain to be done?

General Griffin. An additional $273 million is required beyond fiscal year 2001 for continued engineering and design of the lock, acquisition of the remaining properties, and construction of the lock.

Question. Are there additional Corps capabilities at Marmet for fiscal year 2001 above those identified in the President's budget?

General Griffin. Subject to the usual qualification, the Corps has the capability to use an additional $7.1 million, for a total appropriation of $13.6 million, to advance engineering and design and land acquisition. Advancement of engineering and design at the capability level would advance project completion by one year.

Question. I would like to again remind the Corps that many people are affected by this project—from those whose lives and homes are being disrupted by the construction, to all of the people and industries whose livelihoods depend upon the locks, the shipping, and the products that go through Marmet locks. Therefore, it is imperative for all of us to move this project forward efficiently so at to avoid any unnecessary delays.

General Griffin. Yes, sir.

LEVISA AND TUG FORKS OF THE BIG SANDY RIVER AND UPPER CUMBERLAND RIVER, WEST VIRGINIA, VIRGINIA AND KENTUCKY—WEST VIRGINIA TUG FORK FLOOD PROTECTION PROJECTS

Question. For fiscal year 2000, Congress provided $4,400,000 to continue work on flood protection projects in southern West Virginia along the Tug Fork and its tributaries as part of the multi-state Section 202 project. While the President's request includes $12,100,000 for Levisa and Tug Fork projects for fiscal year 2001, all of these funds are slated for other states.

Last year, there were significant delays associated with the Corps executing Project Cooperative Agreements for the Upper Mingo County project and the McDowell County project. Have these project agreements been executed?

General Griffin. Both project agreements have been executed. The Upper Mingo County Project Cooperation Agreement was amended in June 1999 to include the tributary areas. The McDowell County Project Cooperation Agreement was executed in September 1999.

Question. What activities will remain to be done beyond fiscal year 2000 in lower Mingo County and what is the cost of the remaining effort? Does the Corps have capabilities in lower Mingo County in fiscal year 2001?

General Griffin. The flood proofing or acquisition of structures would continue beyond fiscal year 2000 if funds were provided. The remaining cost is $2 million. The capability for fiscal year 2001 is $1.6 million, subject to the usual qualification.

Question. What activities will remain to be completed beyond fiscal year 2000 in upper Mingo County along the Tug Fork and its tributaries and what is the cost of the remaining effort? Does the Corps have capabilities in upper Mingo County in fiscal year 2001?

General Griffin. Non-structural flood damage reduction measures would continue beyond fiscal year 2000 if funds were provided. The remaining cost is $2,818,000. The capability for fiscal year 2001 is $1,500,000, subject to the usual qualification.

Question. What activities will remain to be completed beyond fiscal year 2000 in McDowell County and what is the cost of the remaining effort? Does the Corps have capabilities in McDowell County in fiscal year 2001?

General Griffin. Remaining activities include acquisition, flood proofing, and construction of relocated schools, town halls, and fire stations. The remaining cost is $166,359,000. The capability for fiscal year 2001 is $600,000, subject to the usual qualification.

Question. What is the approved plan for schools in the McDowell County Nonstructural Project?

General Griffin. The approved plan consists of the construction of ringwalls to protect schools in place, or relocation and re-construction of schools out of the floodplain, whichever is the least costly, for six schools. The Government also requires the regulation of each former school site, consistent with the project's flood control purpose.

Question. What is the locally preferred plan for the McDowell County project?

General Griffin. The locally preferred plan is to construct two replacement schools, allowing the consolidation of five county elementary schools. The Federal participation in funding the school consolidation would be to contribute an amount equal to the least costly method of flood protection for each school. The approved plan and locally preferred plan both include relocation of the high school out of the floodplain.

Question. What must be done to implement the locally preferred plans for the McDowell County project?

General Griffin. A report on the locally preferred plan would be prepared that includes cost comparisons, documentation of NEPA compliance, and identification of any changes in Federal and non-Federal responsibilities. The Project Cooperation Agreement would be amended based on the report. The non-Federal sponsor would agree to minimize flood risk to the new schools and prevent flood-prone construction at the former school sites.

Question. What is the schedule for completing the additional design documents for the McDowell County project?

General Griffin. The report on the locally preferred plan will be completed in May 2000. The first relocations design document for consolidation of three elementary schools will be completed in September 2000. The second relocations design document to consolidate the other two elementary schools will be completed in March 2001.

Question. What activities will remain to be completed beyond fiscal year 2000 in Wayne County and what is the cost of the remaining effort? Does the Corps have capabilities in Wayne County in fiscal year 2001?

General Griffin. The acquisition or flood proofing of structures would continue beyond fiscal year 2000 if funds were provided. The remaining cost is $6,244,000. The capability for fiscal year 2001 is $400,000, subject to the usual qualification.

WHEELING RIVERFRONT, WEST VIRGINIA

Question. Wheeling, West Virginia, is in the midst of major preservation and rehabilitation project to protect and enhance its cultural and commercial resources in its central business district. In fiscal year 2000, Congress provided $100,000 for the U.S. Army Corps of Engineers to provide assistance and support to the preservation and revitalization plans associated with the Wheeling National Heritage Area. These funds were to allow the Corps to objectively analyze the planned and ongoing design and construction work connected with these restoration efforts. This is an important project and I believe that the Corps might have some expertise that would be useful in the effort.

What is the status of this investigation?

General Griffin. In March 2000, Pittsburgh District issued a Notice to Proceed to its indefinite Delivery Architect/Engineer contractor to complete a Special Project Report. This report that will evaluate improvements to the waterfront at the confluence of the Ohio River and Wheeling Creek within the Wheeling National Heritage Area, Wheeling, West Virginia. The contractor's report will be submitted in June 2000.

Question. What types of capabilities has the Corps identified to date?

General Griffin. Corps capabilities that are anticipated to be applicable to this project are to dredge the lower one mile of Wheeling Creek for recreational boating and use the dredged material, if clean, to cap two brownfield sites adjacent to the Wheeling waterfront.

Question. What would be the next step toward further involving the Corps with the revitalization efforts underway in Wheeling, with each capability identified?

General Griffin. After the Special Project Report is completed in June 2000, findings must be coordinated with the Wheeling National Heritage Corporation and the City of Wheeling to determine local interest in pursuing the identified initiatives.

Question. What legislation, if any, would be required to authorize the Corps' participation in each area of assistance identified?

General Griffin. Authorization legislation and funding would be required.

Question. What would be the cost-share requirement for each of the capabilities identified?

General Griffin. If the work were authorized, some or all costs would be assigned to recreation or recreational navigation and would be cost shared 50 percent Federal and 50 percent non-Federal unless otherwise specified in law.

LOWER MUD RIVER, WEST VIRGINIA

Question. The Lower Mud River project, authorized by Section 580 of the 1996 Water Resources Development Act, was originally a Department of Agriculture project. Its purpose is to mitigate the repeated flooding events that have caused extensive damage to the City of Milton, West Virginia.

What is the status of the limited reevaluation report being conducted by the Corps on the earlier Department of Agriculture study?

General Griffin. The Corps reevaluation report is scheduled for completion in July 2000. The West Virginia Soil Conservation Agency is cost sharing this report.

Question. What activities will remain to be completed beyond fiscal year 2000 for the Lower Mud River project and what is the cost of the remaining effort? Does the Corps have capabilities for this project in fiscal year 2001?

General Griffin. The President's fiscal year 2001 budget requested $650,000 in General Investigations funds to continue preconstruction engineering and design (PED). Due to acceleration of the work, this amount is now sufficient to complete PED. Subject to the usual qualification, the Corps total capability in fiscal year 2001 is $1,000,000 of Construction, General funds to complete PED, negotiate and execute a Project Cooperation Agreement, and initiate construction.

Question. When does the Corps anticipate that construction will be able to commence?

General Griffin. If funded, project construction could begin in the third quarter, fiscal year 2001.

LONDON LOCKS AND DAM, WEST VIRGINIA

Question. The fiscal year 2000 Energy and Water Appropriations Act included $600,000 to initiate construction of the London Lock and Dam rehabilitation project. This project will replace the upper guard wall and extend the lock chamber. The rehabilitation project is needed to avoid future lockage delays along the Kanawha River at London.

What work will be accomplished with the fiscal year 2000 funds?

General Griffin. Fiscal year 2000 funds will be used to initiate construction of phase 1, which consists of fabricating the needle dam beams, needle dam sheet piling, and pre-cast concrete needle sill, and to continue design for phase 2A, which consists of electrical and mechanical work not requiring closure of the lock chamber.

Question. What is the total cost of the project?

General Griffin. The total cost of the project is $22.2 million.

Question. Does the Corps have additional capabilities for fiscal year 2001 that would accelerate the completion of this project if funds were available?

General Griffin. Yes. Subject to the usual qualification, the fiscal year 2001 capability is $5 million, $3.2 million more than the President's Budget Request of $1.8 million. The additional funds would be used to complete engineering and design and to initiate construction of phase 2B, which involves closure of the lock chamber.

WEST FORK RIVER, WEST VIRGINIA

Question. For the past two years, I have received communications from constituents in Harrison County, West Virginia, for a flood warning system along the West Fork River.

To what extent has the Corps participated in the funding and installation of such early warning systems at other locations?

General Griffin. In 1998, the Pittsburgh District completed implementation of a comprehensive flood warning system (FWS) for the Cheat River Basin in West Virginia, and the Huntington District completed a similar system for the adjacent Greenbrier River Basin, also in West Virginia. Both systems involved installing several new stream gages and connecting the new gages and existing stream and precipitation gages with flood forecasting software via radio, telephone, and satellite communications technology. Installation of these FWS was 100 percent Federally funded in accordance with the Energy and Water Development Appropriations Act, 1997. The State of West Virginia is the project sponsor of both FWS and pays for operation and maintenance of the new gages. The Pittsburgh District currently is planning a FWS in the Tygart River Basin, West Virginia, as an element of the West Virginia and Pennsylvania Flood Control, West Virginia and Pennsylvania, project, which does not extend to the West Fork Basin.

Question. What role would there be for a flood warning system in protecting residents along the West Fork River?

General Griffin. A flood warning system would likely provide several hours of additional warning time to communities and property owners along low-lying areas adjacent to the West Fork River and possibly some major tributaries. This would reduce the flood threat to life and property.

Question. What would be the estimated cost for installation of such a system? Is there a cost-sharing requirement for this system? General Griffin. The West Fork Basin is roughly similar in size to the Cheat and Greenbrier Basins, so $500,000 should be sufficient to plan and implement a similar comprehensive FWS. There was no cost sharing for implementing the Cheat and Greenbrier FWS, because of the appropriation act language. In the absence of such special legislation, the Corps could plan and implement a FWS under its existing Section 205 Continuing Au-

thorities Program for flood damage reduction, with a 35 percent non-Federal share of $175,000 and a 65 percent Federal share of $325,000.

Question. How much does it cost to maintain a flood warning system once it is fully operational and what entity would be responsible for maintaining it?

General Griffin. The new Cheat flood warning system gages are being maintained for approximately $6,500 per gage per year. There were seven new stream gages, so the total annual cost is about $45,000. As the local sponsor, the State of West Virginia, through its Office of Emergency Services, pays for maintenance of these new gages. Each stream or precipitation gage that existed prior to its incorporation into the new system is still maintained by its owner, which is either the National Weather Service, the U.S. Geologic Survey, or the Corps of Engineers.

WEST VIRGINIA STATEWIDE FLOOD PROTECTION PLAN, WEST VIRGINIA

Question. Congress provided $400,000 in fiscal year 1998 and $624,000 in fiscal year 1999 for the Huntington Corps of Engineers, on a 50/50 cost-share basis with the West Virginia Department of Agriculture, to conduct a comprehensive study of the chronic flood problems that devastate West Virginia.

What is the status of the study?

General Griffin. The study was divided into two phases to match the two-year funding cycle of the sponsor. The Corps has completed twenty percent of the work tasks in phase I, including updating data on flood damages and the costs of prospective water resources projects and an analysis of local government financial capability to cost share those projects. The phase II agreement was provided to the non-Federal sponsor for review and execution in September 1999, but has not been executed by the sponsor at this time.

Question. Is the project behind schedule? By how much? What factors are contributing to the delay and what is being done to get the project back on track?

General Griffin. The project is behind schedule. Phase I is behind by eight months. Completion was scheduled for December 1999. Factors leading to the delay include late receipt of the sponsor's matching funds and a delay in establishing the multi-agency task force required in the study agreement. Phase II has not been initiated and thus far is behind two months from the initial schedule. The principal cause of delay of the second phase is difficulties encountered in defining the sponsor's in-kind contribution. The Corps and the sponsor are working to establish the task force, define in-kind contributions for phase II, execute the phase II agreement, and reschedule phase I and II studies to be concurrent, thus reducing schedule impacts.

Question. What activities will be accomplished in fiscal year 2000?

General Griffin. Following formation of the task force, remaining phase I study work tasks will be completed. These include flooding problem identification, plan formulation, and development of a statewide strategy for flood protection. Once the phase II agreement is executed, the phase II work tasks could be initiated. Phase II activities include development of a statewide flood warning system, training for floodplain managers, development of model watershed plans, and development of recommendations for flood control programs.

Question. What activities will be accomplished in fiscal year 2001?

General Griffin. The phase II tasks will be completed, and phase I and II study documentation will be merged into a single decision document for the state executive and legislative offices.

Question. When will the project be completed and what will the study provide?

General Griffin. The study is scheduled for completion in July 2001. It will provide a comprehensive strategy for addressing flooding problems throughout West Virginia, concentrating on unmet flood control needs, especially in high-priority areas of the state where chronic flooding occurs. It will provide a statewide flood damage assessment, identify existing flood control shortfalls, assess existing Federal and state flood protection programs, formulate flood protection and floodplain management program improvements, assess non-Federal financing capability, identify financing needs for investment in flood protection, develop a long-term investment strategy for the state, and a provide a detailed report on a statewide flood warning system.

Question. What additional Federal resources are needed for this project?

General Griffin. No additional Federal funds are required to complete the study.

QUESTIONS SUBMITTED BY SENATOR HERB KOHL

LA FARGE DAM DEAUTHORIZATION

Question. Why was the La Farge Dam/Kickapoo Reserve project not included in the President's Budget? I had several contacts with the Corps over the last year, all of which led me to believe that the Corps was committed to moving forward and towards completion. I was very surprised to see that no funding was included. We have been funding this program for three years through Congressional adds. What happened to this funding in the President's Budget?

Answer. All work except the highway repairs and relocations is funded, and a decision that will establish the relative priority of the highway work in the Administration's program is still pending. This project was considered, along with many other worthy projects nation-wide, for the budget, but was not selected for inclusion in the President's Budget. There were two primary factors that eliminated the La Farge project during the fiscal year 2001 budget prioritization process. First, the authorized project modifications do not provide Net Economic Development benefits. Second, under the terms and conditions prescribed by Section 361 of the Water Resources Development Act of 1996, the State of Wisconsin must sign a written agreement to hold the United States harmless from any damages related to the transfer of lands and improvements before the Corps of Engineers can proceed with this project. Currently, the State does not have the legal authority to furnish the hold harmless provisions as required by law. However, it is our understanding that legislation to provide such authority recently passed the State legislature and is awaiting signature by the Governor.

FOX RIVER, WISCONSIN

Question. I have recently been contacted by the State of Wisconsin, and notified by the Detroit District, that there is a proposal to turn over the locks on the Fox River to the State of Wisconsin. The State, with federal help, would then do the necessary repairs to reopen the locks to traffic and take on the operating costs. The State and the local community seem eager to take on responsibility for the locks, and I have a few questions about the potential transfer.

Is there a concrete plan for turning over the locks and for the State of Wisconsin's management of those locks?

General Griffin. Sir, the Corps has been involved in extensive negotiations with the State involving the transfer of the navigation facilities, and we anticipate signing a formal agreement this Spring. The actual transfer would take place after completion of historical, cultural, and environmental documentation and the appropriation of funds for transfer-related payments. The State intends to use Federal and non-Federal funds to repair and rehabilitate the locks and reopen them. The exception is the Rapide Croche lock, which has been closed to prevent invasion of the sea lamprey.

Question. Are you aware of any existing claims to the land by Native American Tribes?

General Griffin. No claims have been made by any Native American tribe for any portion of the Fox River navigation system. We are not aware of any former reservation on project lands or of any reversionary interest held in project lands by Native American tribes.

Question. Do the locks have adequate invasive species control measures to protect the wildlife in Lake Winnebago?

General Griffin. Sir, a sea lamprey barrier was installed by the Corps at the Rapide Croche lock and dam in 1988. As part of this barrier, the gates to the lock were permanently closed. Any agreement to transfer the locks would contain a condition that the Rapide Croche sea lamprey barrier be maintained. The sea lamprey has been the invasive species of most concern on the system. There are no other invasive species control measures in place. Transfer would not impact the status quo. After transfer, the State of Wisconsin could evaluate and, if necessary, modify its operations to address concerns with invasive species.

Question. Will an environmental impact statement be necessary before the locks are reopened?

General Griffin. An Environmental Assessment is being prepared to address the Federal action, which is solely the transfer of the land and facilities. Future operation (opening) and maintenance of the locks would become the responsibility of the State of Wisconsin.

Question. Has the Corps examined whether the plan to reopen the locks is economically viable from a federal perspective?

General Griffin. Sir, there are benefits to be gained from reopening the locks; however, not all repair and rehabilitation costs related to reopening the locks are economically justified. The payment to be made by the Corps under the agreement would be based on the avoided cost of placing the locks in a long term inoperable status and the repair and rehabilitation costs that are economically justified.

Question. I understand that the Corps would seek authorization in WRDA for a direct appropriation for this project. Has this been done in other states and would headquarters support a direct appropriation?

General Griffin. The payments under the agreement will be conditioned upon the Congress appropriating the necessary funds. Should the agreement be executed, the Corps would be in a position to seek appropriations for the payments. This would be done through the normal budget process. The Army does not intend to seek additional authorization to carry out the transfer and payments.

UPPER MISSISSIPPI AND ILLINOIS NAVIGATION STUDY, ILLINOIS, IOWA, MINNESOTA, MISSOURI AND WISCONSIN

Question. Reports have indicated that the Corps may have discounted the role small scale measures could play in ameliorating traffic delays at the locks on the Mississippi. Corps economists indicated that these measures, which include mooring cells, traffic scheduling, and industry self-help could save the taxpayers millions of dollars and eliminate the need for lock extensions. Have these options been fully considered? Can you explain why these measures were not accepted, and could you provide me with the data and analysis used to come to that conclusion?

Answer. These three small-scale measures-mooring cells and buoys, traffic scheduling, and industry self-help have been fully considered in the study's plan formulation process. Documentation to date for small-scale measures is included in three interim study products: General Assessment of Small-Scale Measures report dated June 1995, which provides information on the 92 small-scale measures considered in early brainstorming sessions that screened the measures down to 16; Detailed Assessment of Small Scale Measures report dated December 1998 which provides more detailed examination and quantification of performance for these 16 measures; and, Summary of Small-Scale Measures Screening report dated April 1999, which further screened the measures down to 5 remaining small-scale measures. The three referenced small-scale measures are discussed in these three interim study reports.

All three of these measures are present to some degree in the future river conditions. First, mooring cells and buoys are part of the alternative plans still under consideration for the with-project conditions. Mooring facilities provide some project benefits, but alone they do not considerably reduce future delay projections. Second, traffic scheduling has been an integral part of our standard operating procedure and will continue to be into the future in the without-project condition, based on historic application and our study assumptions. The traffic scheduling is in the form of an N-up/N-down policy where the lock operator locks through "N" vessels traveling in one direction prior to locking through "N" vessels traveling in the opposite direction. Other studies have demonstrated that this existing N-up/N-down scheduling policy captures the majority of scheduling-related benefits, and the effects of projected traffic growth and related delay potential would overwhelm the benefits of any other additive scheduling procedures. Third, industry self-help is the practice where industry tows assist each other by extracting unpowered cuts, usually 9-barge configurations, from the lock without the assistance of lock personnel or equipment. Industry self-help is currently utilized for approximately one to one-and-a-half percent of all lockages at the busiest locks on the system. Additional coordination with the navigation industry, U.S. Maritime Administration, and U.S. Coast Guard in 1998 indicated that regular use of industry self-help is not practical due to the variability in conditions where it can be implemented safely. The general industry comment was that industry self-help is a stop-gap measure that is used to minimize the impacts of a breakdown on the system, not a routine, long-term measure to address increasing system traffic and delay. In addition to this information, the study team considered site-specific input from Corps lock personnel; historical lock performance data and current usage, safety, risk, and liability considerations; and concerns raised over potential impacts to environmental and social resources from growing usage. Also, industry self-help with guidewall extensions was screened out because it is out-performed at a similar cost by powered kevels with guidewall extensions. Considering the variables involved, the successful implementation of industry self-help as a standard operating procedure does not appear to be viable as a long-term solution. Lock statistics from 1992 to 1998 showed that the average actual usage of self-help was significantly less than 1.5 percent of total commercial lockages, and that only Locks 24 and 25 had achieved significant time savings historically. The

highest usage noted during that period was in 1992 at Lock 25 where it was 3.6 percent. Therefore, the assumptions for the model limited self-help usage to 5 percent, which allows some increase over current usage while remaining close to observed rates and reasonably considers the above-stated concerns.

The referenced interim products have been discussed in public forums. Additionally, copies of the documents discussed have been provided to the Committee. All aspects of the formulation will be documented as the study team continues to write the draft Feasibility Report and Environmental Impact Statement for eventual public release and review. The plan formulation process is still underway, and no final study conclusions have been reached. The Feasibility Report and Environmental Impact Statement will not be final until the issuance of the Division Commander's Public Notice, at which time the report and Environmental Impact Statement will be forwarded for Washington-level processing.

QUESTIONS SUBMITTED BY SENATOR BYRON DORGAN

MAPLE RIVER, NEAR ENDERLIN, NORTH DAKOTA

Question. After years of flooding along the Sheyenne River at West Fargo, ND, a dry dam was proposed on a tributary stream, the Maple River, near Enderlin. The Maple empties into the Sheyenne north of West Fargo and it was suggested that a dam would reduce back up flows in the Sheyenne. The dam would only hold water during flood emergencies. The Corps determined that the dam would not meet its cost-benefit ratio so local interests (Southeast Cass Water Board) decided to build it on its own. Although I've been told that the Water Board has tried to work with the Corps to take the necessary steps to construct the dam, action has been stalled for several years.

I've heard from the water board that the Corps ought to be dealing with this issue more expeditiously. Can you please give me an update what the Corps is doing—if anything—to deal with the Maple River Dam situation?

Dr. Westphal. The Corps is working to conclude its environmental studies that are required as part of the permitting process for the project. The permit applicant has chosen the same site that was considered earlier by the Corps for a flood control dam because it is the most effective location for such action. The site, however, is rich in cultural history as indicated by approximately 60 site leads, archeological sites and Indian village sites dating back hundreds of years. Because of this, there is considerable interest by representatives of seven Tribes.

An effort was made to prepare a Programmatic Agreement (PA) setting forth how resources would be dealt with in the future. Because some of the Tribes oppose the project, we have been unable to develop a PA that is satisfactory to all. Therefore, the Final Environmental Impact Statement (FEIS) will identify, in detail, the cultural resources known in the area, their significance, expected effects of the proposed project and its reasonable alternatives, and possible mitigation for those effects. Each of the seven interested tribes must be included in this process, as required by regulations; however, completion of the process does not rely on their participation.

We expect that the coordination and impact analyses will take a minimum of 120 days. Subsequent to that, the FEIS will be prepared and mailed. This should occur no later than August 20, 2000. A Record of Decision could be completed 30 days later, but due to the intensive opposition by Tribes, additional resolution processes are expected to occur with respect to the Section 106 compliance.

WILLISTON, NORTH DAKOTA

Question. The water transmission line that serves the city of Williston, ND, has been damaged by the construction of the Garrison Dam. Much like the rising water table that has resulted in the need for the purchase of flowage easements at the Buford Trenton Irrigation District, the water transmission line is threatened by rising water tables. I've been advised that the Corps does not have authority to replace this line (despite the federal government's clear responsibility to mitigate the negative consequences of the dam's construction.

Can you please clarify if the Corps has the authority to replace the water transmission line? If the Corps does not have this authority, please suggest authorizing language that would enable the Corps to move forward with this construction.

Dr. Westphal. The Corps does not have the authority to replace the water transmission line. The following proposed authorizing language is offered for your consideration: The Secretary is directed to use up to $4,000,000 of the funds appropriated herein to replace or relocate the municipal water transmission line owned by the

City of Williston, North Dakota, and located adjacent to and running parallel to the levee protecting the City.

Question. Last fall, my colleagues from North Dakota and I requested that the Corps reprogram funds into the Section 33 account for the continuation of the Missouri River Bank Stabilization study after funding for the cumulative Environmental Impact Statement (EIS) was not included in the fiscal year 2000 Energy and Water Development Appropriations bill. Because I think that this is one of our state's water management priorities, I am once again requesting money for this project because it is a critical component of the process to develop a common vision for the river across a variety of North Dakota interests.

Would you agree that this kind of analysis has the potential to address many technical issues and provide a foundation for future policy decisions on bank stabilization?

Dr. Westphal. Yes, I do agree. The potential for cumulative impacts from bank stabilization works along the Missouri River has not been documented in a comprehensive study. The Section 33 cumulative impacts study presents an opportunity to answer questions regarding the presence of bank stabilization structures in the river. A geomorphologic study is being conducted, as funds become available, to identify and address technical concerns and issues. The study will determine the existing physical condition of the river channel, project future channel conditions and determine the impacts that additional bank stabilization may have on the alluvial processes and channel formation. The information will be useful to help guide future decisions regarding construction under the Section 33 program authority. It will also be useful as the basis for recommending long-term strategies for the management and protection of the Missouri River.

DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

STATEMENT OF ELUID L. MARTINEZ, COMMISSIONER

ACCOMPANIED BY:

DAVID COTTINGHAM, COUNSELOR TO THE ASSISTANT SECRETARY FOR WATER AND SCIENCE, DEPARTMENT OF THE INTERIOR

J. RONALD JOHNSTON, PROGRAM DIRECTOR, CENTRAL UTAH PROJECT COMPLETION ACT OFFICE, DEPARTMENT OF THE INTERIOR

OPENING REMARKS

Senator DOMENICI. We have Commissioner Eluid Martinez with the Bureau of Reclamation, David Cottingham, Counselor to the Assistant Secretary for Water and Science, Department of the Interior, and Program Director for the Utah Project Completion Act Office, J. Ronald Johnston.

Commissioner, we're very pleased to have you and you're going to lead off. I think it's only fair to say to you right at the onset, we are very grateful and thankful for the job that you have done as Commissioner. A lot of new twists and turns have entered the playing field since you became Commissioner, and I think you have stepped up to the batter's box on most of them and have done an excellent job and I thank you for that. I know in particular in New Mexico on the water-short Pecos River Basin and the Rio Grande Basin, you've done an admirable job of trying to help sort out things and get us through some difficult problems.

If you've been looking at the drought in New Mexico, which we certainly have, I would like to report to you that about 40 percent of the State got incredible snowfall overnight. I don't know what that means in terms of the total precipitation, but whatever we get helps you in your job and helps all of us.

Your testimony will be made part of the record. If you could proceed to summarize it, we would be most appreciative.

STATEMENT OF ELUID L. MARTINEZ

Commissioner MARTINEZ. Mr. Chairman, I think the reason it's snowing and raining is probably because we showed up there last week. At any rate, Mr. Chairman, please allow me to express my sincere appreciation both to you and Senator Craig and to members of the committee for the support you've provided me during my tenure as Commissioner of Reclamation and to Reclamation in general.

My appearance today in support of Reclamation's budget will most likely be my last before this subcommittee. My wife is looking forward to returning to New Mexico at the end of this Administra-

tion. Thank you for the opportunity to serve as Commissioner of the Bureau of Reclamation.

I welcome the opportunity to appear today in support of the President's fiscal year 2001 budget for the Bureau of Reclamation, which is a request for $801 million, a $33.1 million increase over fiscal year 2000 appropriations. My statement has been submitted for the hearing record and with your permission, I will summarize that testimony.

Mr. Chairman, Reclamation's 2000–2005 Strategic Plan identifies three mission goals that are linked to Reclamation's budget and are the essence of what Reclamation is all about. These goals are to manage, develop and protect water and related resources to help meet the future needs of current and future generations; to operate, maintain and rehabilitate our facilities to provide projected benefits flowing from those projects; and to ensure organizational effectiveness.

PREPARED STATEMENT

Mr. Chairman, in keeping with your statement that you would like to be out of here by 11:30 this morning, my statement has been submitted for the record and I would be glad to answer any questions you might have.

[The statement follows:]

PREPARED STATEMENT OF ELUID L. MARTINEZ

Thank you Mr. Chairman and members of the subcommittee. I welcome the opportunity to appear before you today to support the President's fiscal year 2001 budget request of $801.0 million in new budget authority for the Bureau of Reclamation. This includes $741.0 million for Reclamation's programs and $60.0 million for the California Bay-Delta Restoration activities.

MISSION

As I am sure you are aware, Reclamation's mission is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public. The Bureau of Reclamation has been developing and managing water and related resources in the Western United States since 1902. Reclamation is today one of the largest suppliers and managers of water in the 17 western states

Its facilities, which include reservoirs with the capacity to store 245 million acre-feet of water, deliver water to one of every five western farmers to irrigate about 10 million acres of land and to over 31 million people for municipal, rural, and industrial uses.

Reclamation is the second largest producer of hydroelectric power in the nation. Reclamation produces enough electricity to serve 6 million homes, and generates nearly a billion dollars in annual power revenues.

The ingenuity and expertise Reclamation used in the 20th Century to plan and construct dams, reservoirs and other water supply facilities is currently being used for:

—Managing the dam safety program to minimize risks to the downstream public, property, and natural resources,
—Facilitating Reclamation's operation and maintenance program to maximize public benefits at the least cost,
—Developing partnerships with customers, states, and tribes,
—Finding ways to bring competing interests together to address water needs,
—Transferring title and operation of facilities to local beneficiaries,
—Establishing results-oriented business practices that will provide the most effective and efficient service to customers, partners, and employees,
—Placing greater emphasis on promoting the conservation, reclamation, and reuse of existing water supplies,

—Protecting and restoring fish and wildlife resources to ensure future reliability of project water and power benefits.

The fiscal year 2001 President's budget request continues to demonstrate the Administration's strong commitment to this mission.

Water resource projects developed by Reclamation continue to contribute to sustained economic growth and an enhanced quality of life in the Western States. In recent years, Reclamation has primarily moved from development to management of these important resources. In cooperation with state, tribal, and local governments, along with other entities and the public at large, Reclamation develops solutions for water resource issues—solutions that are consensus-based, cost effective, and environmentally sound.

Although this infrastructure is sophisticated and has allowed significant development of urban and agricultural areas, it is subject to and results in various stresses, such as aging facilities, land use changes, agricultural commodity prices, changes in domestic and international economies, instream flow needs for habitat protection, and water rights settlements.

The future of the West's water supply infrastructure, including Reclamation project facilities, must focus on maintaining and optimizing the utility of existing facilities, keeping costs down, ensuring that public facilities fit more comfortably into the natural environment, and demonstrating ingenuity in meeting needs in the most efficient ways possible. While supply-oriented solutions should not be entirely ruled out, innovative solutions, such as water conservation and wastewater recycling, must be explored.

One of Reclamation's strategies is to efficiently target its planning program to search for contemporary solutions deserving of national, state, and/or local investment. Financial resource constraints facing the Nation require a commitment to expand the use of decision support tools, including benefit-cost and risk analyses, and to choose only the most efficient and cost-effective solutions to the complex water resource challenges that we face.

I would like to point out that every day we see immediate water resource needs important to state, local and tribal partners. Many states are developing State Water Plans, for instance, to address resource utilization and stewardship against the backdrop of large population increases and the growing notion of sustainable development.

Reclamation can assist in the systematic evaluations of existing and potential water use within a river basin or subbasin to determine how present and future needs can best be met.

WATER AND RELATED RESOURCES

The total request for projects and programs related to Water and Related Resources is $674.2 million. This is partially offset by an undistributed reduction of $31.1 million in anticipation of delays in construction schedules and other activities, resulting in a net request of $643.1 million.

The fiscal year 2001 request provides a total of $288.9 million for facility operation, maintenance, and rehabilitation. Providing adequate funding for these activities continues to be one of Reclamation's highest priorities. Reclamation staff is working closely with water users and other stakeholders to ensure that available funds are used effectively.

Facility operation, maintenance, and rehabilitation (OM&R) funds are used to allow Reclamation to identify, plan, and implement, among other activities, dam safety corrective actions and site security improvements. The fiscal year 2001 request includes $77.3 million for the Dam Safety Program to protect the downstream public by ensuring the safety and reliability of Reclamation dams.

Reclamation plans to initiate safety of dams modifications at several facilities in the near future, including Horsetooth Dam, Colorado; Clear Lake Dam, Oregon; Pineview Dam, Utah; Salmon Lake Dam, Washington; Wickiup Dam, Oregon; Grassy Lake Dam, Wyoming; Keechelus Dam, Washington; Deer Creek Dam, Utah; and Warm Springs Dam, Oregon.

The Administration sent legislation (H.R. 3595) to the Congress to increase by $380 million the authorized cost ceiling for the Reclamation Safety of Dams Act. Current projections indicate there is sufficient authority to support the fiscal year 2001 budget request, but additional authority will be needed in fiscal year 2002 and beyond.

Additionally OM&R funds allow Reclamation to ensure the reliability and operational readiness of dams, reservoirs, powerplants, and distribution systems while also helping the timely and effective delivery of project benefits.

The fiscal year 2001 request also includes a total of $385.3 million for resource management and development activities. The request for these activities includes funding for projects currently under construction, including the Central Arizona Project, the Mni Wiconi Project in South Dakota and the Garrison Diversion Unit in North Dakota, as well as for the recently enacted Rocky Boy's Indian Water Rights Settlement in Montana.

Resource management and development activities include funding for a number of high priority activities that emphasize improved water management and environmental compliance. In the area of environmental compliance, funds are requested for endangered species conservation and recovery efforts in the Columbia /Snake and other river basins, fish and wildlife and other work on California's Central Valley Project, and construction of a temperature control device at Glen Canyon Dam. Funds requested for other projects, such as the Lower Colorado River Operations Program and the Klamath Project, would meet objectives in both of these areas.

Funds for the Lower Colorado River Operations Program are used to implement and accomplish the Secretary of the Interior's "Water Master" function for the lower Colorado River area. This function includes ongoing negotiation, development, and execution of water service contracts, determining consumptive use of Colorado River water, identifying non-contract water users and completing appropriate environmental and endangered species programs.

CENTRAL VALLEY PROJECT RESTORATION FUND

The fiscal year 2001 Reclamation budget includes a request for $38.4 million from the Central Valley Project (CVP) Restoration Fund, which is the estimated level of collections from project beneficiaries. The fiscal year 2001 request funds a wide variety of activities to restore fish and wildlife habitat and populations in California's Central Valley Project, including acquisition of water for anadromous fish and other environmental purposes, providing long-term water deliveries to wildlife refuges, implementation of the Anadromous Fish Restoration Plan, restoration of land to improve wildlife habitat, conserve water and reduce drainage, and construction of fish screens and other facilities.

The request is financed by CVP water and power users, including an estimated $28.2 million in additional mitigation and restoration charges. The fiscal year 2001 budget contains a proposal that, in fiscal year 2001 and each year thereafter, the full amount of these additional charges would be collected, and all revenues deposited in the CVP Restoration Fund from this and other sources would be directly available for expenditure.

CALIFORNIA BAY-DELTA RESTORATION

The fiscal year 2001 budget includes a request for $60.0 million for the Bay-Delta Restoration program. While funding is requested in Reclamation's budget, funds for specific projects or programs will be transferred to participating Federal agencies based on plans developed by CALFED. Reclamation manages most of these projects.

Over the past three years, CALFED, a consortium of Federal and State agencies, has funded all or portions of some 240 ecosystem restoration projects and programs with monies from the State of California, the Federal Government and stakeholder funds.

These funds support an ecosystem restoration program of vast breadth and scope with the ultimate goal of developing a long-term solution that addresses both environmental and water management problems associated with the Bay-Delta system.

The fiscal year 2001 request includes $36.0 million to continue implementation of the ecosystem restoration program initiated in 1998. Activities funded in this program include improvements in fish screens and fish passage, restoration of habitat in flood plains and marshes, and river channel changes. Funding is also requested for improvements in instream flows, water quality and water temperature, as well as improvements in fish management and hatchery operations. The program also funds efforts to control introduced and undesirable species as well as monitoring, permit coordination and other special support programs.

The request also includes $24.0 million for a broad variety of water management activities in accordance with the CALFED Bay-Delta Program including: water use efficiency, water transfers, integrated storage investigations and studies for Delta conveyance.

The fiscal year 2001 budget contains a proposal extending the availability of funding authorized by the California Bay-Delta Environmental Enhancement Act through 2003. This proposed extension would support continued Federal participation in the CALFED Bay-Delta ecosystem restoration activities to meet the commitment of the State/Federal Cost Share Agreement. There is no increase in the

amount of funds authorized, rather an extension of time in which funds may be appropriated.

OTHER ACCOUNTS

The request for Policy and Administration (P&A) is $50.2 million. The purpose of this appropriation is to support management and administration activities that are not chargeable directly to a specific project or program. P&A supports all of Reclamation's centralized management functions, such as overall program and personnel policy management; budgetary policy formulation and execution; information resources management; procurement, property and general services policy; and public affairs activities. Since a significant portion of the funding for P&A supports salaries and related costs, this account has been impacted significantly over the past few years, as the funding level for P&A has remained constant while cost-of-living increases associated with salaries and benefits have increased at a rate of 3 to 5 percent per year.

The request for the Loan Program in fiscal year 2001 is $9.4 million, and would continue funding for three loans in California.

Permanent appropriations available in the Colorado River Dam Fund are estimated to be $66.1 million in fiscal year 2001, and non-Federal contributions to Reclamation's Trust Funds are estimated to be $4.5 million.

CONCLUSION

This completes my statement. Please allow me to express my sincere appreciation for the continued support that the Committee has provided Reclamation. I look forward to working with the Committee to further our mutual goals of managing, developing, and protecting water and related resources. I would be happy to answer any questions you may have at this time.

STATEMENT OF J. RONALD JOHNSTON

Senator DOMENICI. We won't be out of here on time, but you're certain that you're comfortable with that?

Commissioner MARTINEZ. Yes, I'm comfortable with that, Mr. Chairman.

Senator DOMENICI. Okay, let's proceed now. Do we have some other witnesses who are going to testify right now? Central Utah Project, would you like to enter your statement as part of the record and please comment for us?

PREPARED STATEMENT

Mr. JOHNSTON. Yes, I am pleased to be here today to represent the President's budget for implementation of the Central Utah Project. I would appreciate my statement being entered for the record and I think with that, I'll just answer any questions that you might have.

[The statement follows:]

PREPARED STATEMENT OF J. RONALD JOHNSTON

I am pleased to be here today to present the President's fiscal year 2001 budget for implementation of the Central Utah Project Completion Act.

The Central Utah Project Completion Act, Titles II–VI of Public Law 102–575, provides for completion of the Central Utah Project (CUP) by the Central Utah Water Conservancy District. The Act also authorizes funding for fish, wildlife, and recreation mitigation and conservation; establishes an Account in the U.S. Treasury for the deposit of these and other funds; establishes the Utah Reclamation Mitigation and Conservation Commission to coordinate mitigation and conservation activities; and provides for the Ute Indian Rights Settlement.

The Act provides that the Secretary may not delegate his responsibilities under the Act to the Bureau of Reclamation. As a result, the Department has established a program coordination office in Provo, Utah, that reports to the Assistant Secretary, Water and Science, and that provides oversight, review, and liaison with the

District, the Commission, and the Ute Indian Tribe, and assists in administering the responsibilities of the Secretary under the Act.

The fiscal year 2001 request for the Central Utah Project Completion Account provides $39.9 million for use by the District, the Commission, and the Department to implement Titles II–IV of the Act, an increase of $0.7 million over the fiscal year 2000 enacted level. The request includes $19.1 million for the District to continue construction on the remaining segments of the Diamond Fork System; to implement approved water conservation and water management improvement projects; and to continue development of planning and NEPA documents on facilities to deliver water in the Utah Lake drainage basin.

The funds requested for transfer to the Mitigation Commission will be used in implementing the fish, wildlife, and recreation mitigation and conservation projects authorized in Title III ($12.8 million); and in completing mitigation measures committed to in pre–1992 Bureau of Reclamation planning documents ($1.4 million). Title III activities funded in fiscal year 2001 include the Provo River Restoration Project; acquisition of habitat, access, and water rights in other key watersheds; and fish hatchery improvements.

Finally, the request includes funds for the Federal contribution to the principal of the Utah Reclamation Mitigation and Conservation Account ($5.0 million); for mitigation and conservation projects outside the State of Utah ($0.4 million); and for program administration ($1.3 million).

In addition to this request, the Bureau of Indian Affairs' budget includes $24.9 million for the Ute Indian Rights Settlement; and $5.0 million is included in the Western Area Power Administration budget for its contribution to the Utah Reclamation Mitigation and Conservation Account.

This concludes my prepared statement. I would be pleased to answer any questions you may have at this time.

Senator DOMENICI. Thank you so much. We will certainly be interested in the statement. Is that the extent of the witnesses? You're here in support?

Mr. COTTINGHAM. Yes, sir.

Senator DOMENICI. Senator Craig, do you have any questions?

Senator CRAIG. I do have one question.

Senator DOMENICI. Could you chair for just a moment and I will be right back.

IDAHO INVESTIGATIONS

Senator CRAIG. Thank you very much, Mr. Chairman, and Commissioner Martinez, let me also echo the comments of the chairman and the opportunity we've had to work with you and the initiatives you've taken, the kind of support you have given us and, in like turn, we've been able to provide you. It's been a positive working relationship and we thank you for that.

I have one question in your fiscal year 2001 budget that I would like to visit with you about and that is a passback from OMB. I understand that the Pacific Northwest Region's budget was about $72 million, mostly O&M, and OMB cut that by about $7.9 million. The Idaho investigation program was cut approximately in half to about $248,000, while others such as Oregon investigations took no cuts. The Idaho investigations were listed as new. I understand these are not new.

Could you explain here for the record what these investigations are and why Idaho took what I think is a disproportionate cut?

Commissioner MARTINEZ. Mr. Chairman, if, in fact, Idaho took a 50 percent cut, that was not the intent and should not be the intent of the Bureau of Reclamation. I believe that most of that cut came from a Fort Hall Reservation study. I will provide you the information for the record. If this program needs additional resources, I will look to see if some re-programming capability exists.

[The information follows:]

IDAHO INVESTIGATIONS

Following the lead of Congress in recent years, the OMB "passback" on the fiscal year 2001 budget did include a reduction in new study activities, but the decision on which study activities to cut was made by Reclamation. As a result of requests from the Department and from OMB to provide additional data on work being performed under the statewide investigation programs, Reclamation's Pacific Northwest Region revised its program narratives for the fiscal year 2001 budget submission. Activities begun under existing line items in prior years were separated from those line items and described as their own line item activity in greater detail. These separated items were then "deemed" to be new starts since they had not appeared in any previous budget submission from the region. As a result, funding for these items was eventually cut from the fiscal year 2001 request.

FORT HALL INDIAN RESERVATION GROUNDWATER CONTAMINATION

Senator CRAIG. Well, let us look at the Fort Hall situation. I need to know the specifics of that. And I say that, Commissioner, because we've had a very substantial underground water contamination problem at Fort Hall and I'm not sure that you all were involved in that. And if you were, is that where these resources are now being taken from? So let us examine that with you. But I see that overall as disproportionate, and if there is a better explanation that you can provide us, we'll look for it.

Commissioner MARTINEZ. Senator, I'll provide that for the record. Based on my understanding the major part of the cut was for that one program. However, I'll provide you a detailed response. And if it is something that is needed in Idaho, I look forward to working with you to make sure we get that done.

Senator CRAIG. Thank you. Mr. Chairman, that's the only question I have. Thank you.

[The information follows:]

FORT HALL

Fort Hall is a special study and has not been part of the Idaho Investigations Program. Although the Fort Hall study was not included in the President's request for fiscal year 1999, the Senate report accompanying the fiscal year 1999 appropriations bill contained a directive to use $200,000 of available funds to begin a feasibility study to address the serious dangers of ground water contamination at the Fort Hall Indian Reservation in Idaho. The Congress added $250,000 to continue the study into Reclamation's fiscal year 2000 budget. The Congressional funding came after the Department had reviewed Reclamation's fiscal year 2001 budget request, so funding was not requested for the Fort Hall project.

DROUGHT SITUATION IN THE WEST

Senator DOMENICI. Thank you very much. Thank you for attending. I appreciate it very much.

I want to ask a few questions with reference to the drought and the anticipation of drought damages. Let me start by saying Congress provided you with $3 million and associated legislative language for funding provided under drought emergency assistance program. The law provided primarily for leasing of water in compliance with State water laws and that purchase be approved by the State in question.

What is the current situation and evaluation with reference to droughts in the West and has it changed appreciably over the last year?

Commissioner MARTINEZ. Mr. Chairman, my information indicates that currently Arizona, New Mexico, Texas, southern California and Hawaii are experiencing drought conditions. There are emergency declarations either in place or expected in the near future. Many areas of the Southwest are in worse condition than they were a year ago. With respect to New Mexico, conditions of anticipated runoff are approximately what they were last year, which is about 40 to 50 percent of average.

Last year, luckily it started raining. As you know, it rained all summer. If we don't have that same scenario, we're going to have a drastic situation in terms of drought in the American Southwest.

With respect to Reclamation projects, the storage carryover in our reservoirs is sufficient to provide water to those project beneficiaries for the next couple of years. The purpose of these reservoirs is to provide that carryover capability.

But with respect to the small irrigation ditches and the acequias in New Mexico, they're going to have some difficult times this summer.

Of the $3 million that the Congress provided last year for fiscal year 2000 for the budget, we have $2.3 million which is still unallocated. But based on the projections, we will probably not have any carryover money into the next year.

We have identified in our budget this year a request for $500,000. We honestly believe that the demand might be somewhere between 2 to 3 million additional dollars. Part of that is because, as you know, the National Drought Policy Commission is expected to send its report to Congress this June. As a result of the activities on the Drought Policy Commission, many more people will become familiar with our program and are going to be asking for more additional money.

DROUGHT AUTHORITY LANGUAGE

There is one issue I need to bring to the Committee's attention. In the past, the Bureau of Reclamation has provided assistance to States and tribes to help them compile their drought contingency plans. The Bureau of Reclamation had been interpreting Public Law 102–250, which is the law that gives us authority to work on drought issues. Title 2 of that Act allows the Bureau of Reclamation to assist States and tribes with resources so they can do their drought contingency plans. The Bureau of Reclamation had been interpreting that language to mean that we could provide financial grants to the States and the tribes, as well as technical assistance.

My attorneys tell me that they interpret the language to mean that we have no authority to provide money, only technical assistance. I would like to get the language corrected if the intent of Congress is to not only provide technical assistance but also financial grants to States and tribes to help them do their planning.

A long answer to a short question.

Senator DOMENICI. Well, I appreciate your frankness. I can't imagine with what's happening out there that we ought to take the risk that we have sufficient monies with the money that hasn't been spent, plus a half a million. I think we better put a little more in that fund and I appreciate your suggesting $2 to $3 million. I

don't think we'll have any trouble getting support for that because those of us who come from arid States know what happens.

People don't understand, if we have a drought, individual water wells that serve a home in a rural part of the State might go dry. If that happened as a result of a serious problem in a city, we would be helping with their water system. If it went out because of a great flood, we would help pay for the infrastructure and the like. We have to try to understand what are the kinds of things that might happen and make sure you have authority, or somebody does. So I would like to just ask two or three questions.

DROUGHT EMERGENCY AUTHORITIES

Could you explain what the emergency authorities are and which are available to the Bureau of Reclamation to mitigate the impact?

Commissioner MARTINEZ. I would be delighted to provide you a detailed response for the record, but basically the National Drought Policy Commission to date has identified the fact that the authority that Congress has provided the Bureau of Reclamation under Public Law 102–250 is really the only authority a Federal agency has been given by Congress to react to drought situations.

The Act basically provides authority to the Secretary of Interior to do two things: To assist States and tribes and governmental entities to do drought contingency plans, and then to provide financial assistance during droughts so the Secretary can drill wells, lay temporary pipelines and redirect water from Bureau of Reclamation projects.

[The information follows:]

DROUGHT EMERGENCY AUTHORITY

Emergency drought assistance is provided through Public Law 102–250, Title I. This assistance is provided only in those instances where a Governor of a State or a tribal leader has made a request for temporary drought assistance and we have determined that such temporary assistance is merited.

Mitigation is defined in recent drought-related literature as an essential, proactive element of drought preparedness which can reduce the overall need for and cost of drought response. In terms of mitigation efforts, Reclamation has the authority to undertake these efforts through programs such as water conservation or wastewater reuse. However, the ability to implement these mitigation efforts depends upon the criteria for eligibility for those programs as well as funding provided for those activities.

DROUGHT POLICY COMMISSION REPORT

I need to again state that the National Drought Policy Commission report, which is anticipated to be transmitted to Congress in June, will define what the Federal agencies have in terms of authority and responsibility in these areas.

Senator DOMENICI. Won't they also recommend what they think we should have?

Commissioner MARTINEZ. That's the intent. It will have recommendations regarding congressional actions as well as administrative actions.

Senator DOMENICI. Well, I want to say I was privileged to draft that legislation. I got a lot of support here and then the House quickly joined and it took the Administration a year to get that commission going, but I attended the first meeting. You were there.

There certainly is sufficient power by the people to make a strong recommendation.

You're a member and I assume that so far, knowing the kinds of problems that you're confronted with in the event of a drought, do you believe that the recommendations are going to be sufficiently positive that we might consider them something we should do?

Commissioner MARTINEZ. Yes, Mr. Chairman. That is part of the discussions that are taking place amongst the commissioners. We feel that in order for that report to be effective, we need to make some concrete recommendations. Therefore, the report will recommend action that the Administration can take immediately, and then we'll also make recommendations regarding what Congress might do in terms of authorizations and funding for down-the-road type issues.

DESALINIZATION RESEARCH

Senator DOMENICI. I'm going to come back to the Pecos River and the Rio Grande in my State, but I would like to talk a minute about desalinization research. Somehow or another desalinization has ended up in your packet of areas where you were expected to do something. How is the desalinization program within the Bureau in your opinion addressing critical issues regarding making desalinization competitive?

Commissioner MARTINEZ. Mr. Chairman, if you recall, last year we had basically the same discussion, and we provided a rather detailed answer for the record. The Bureau of Reclamation historically has been involved in the application of existing technology to try to provide desalinization needs across the Reclamation States.

We work with the Department of the Army, and we also work overseas, especially in Saudi Arabia, to help with desalinization. The state of the art is a question of economics. My understanding is that over the last 10 years, the cost of desalinization has gotten down to where it's becoming a more viable option.

Based on the figures that I have before me, you can now treat brackish water for about a dollar per thousand gallons and seawater from about $2 to $5 per thousand gallons, and that's becoming competitive.

Our budget includes two requests. One is to fund at $1.2 million our continuing efforts to apply the technology that is flowing from research and $300,000 to do research working with academia and the private sector. That goes back to the legislation introduced by Senator Simon, I believe.

We divided the request in our budget into two components. In the past we had merged them both together, the application and the research. This year we have $1.2 million for application and $300,000 for research. I realize that Senator Reid's concern last year was that we were not putting enough money into the research component. I understand that. It's just a question of economics.

I believe our program is effective. We went back and revisited our program. We work with a committee made up of folks from the universities and the private sector who review the research proposals. We have funded a significant number of proposals, although

not as many as we would wish. We hope to continue to work in the research area as well as the application area.

Senator DOMENICI. We understand that overall within the Federal Government, we're spending about $10 million annually for desalinization. Your program is about $1.5 million. The rest is primarily within the Department of Defense. Now, is there any coordination between what the Defense Department does with the $8.5 million I assume they have and the Bureau of Reclamation?

Commissioner MARTINEZ. Yes, it's my understanding, and I reviewed the response we provided last year for the record, that there is a committee that is involved with Federal agencies that coordinates their efforts. I'll provide additional information for the record.

[The information follows:]

DESALINATION COORDINATION

As stated last year, the Bureau of Reclamation has a unique role among the Federal agencies in desalination research, development, and demonstration. Other agencies use and adapt desalination technologies to meet mission specific needs. Many years ago it was generally recognized that a potential existed within the Federal Government for duplication of research efforts. As a result, the Bureau of Reclamation and the U.S. Army Tank-Automotive Research, Development, and Engineering Center created the Interagency Consortium for Desalination and Membrane Separation Research in 1992. Since that time, the Consortium, including other Federal agencies, has met yearly to discuss individual projects being carried out by the agencies and the future directions of their programs. The most recent meeting was held March 21—22, 2000.

The Consortium members work together to establish a communications network that has the following benefits: Prevent Federal duplication of efforts, Pool limited Federal research funding and other resources to obtain common goals, Identify future research needs, and Allow for discussion of new technologies with other experts in the field.

For example, over the past year, the Army has continued to work with Reclamation and the Navy in its procurement of new desalting devices. Reclamation, the Army, and the National Institute of Standards and Technology (NIST) have continued to collaborate in membrane fouling research. The Army and Reclamation continue to develop a new chlorine resistant membrane with tests at the Yuma Water Quality Improvement Center (WQIC) in Yuma, Arizona, the Navy's seawater test facility in California, and Water Factory 21 in Orange County, California. One of the Defense Advanced Projects Agency's research contractors is using Reclamation's WQIC for their testing. The Army and Reclamation work together on the Industrial Advisory Board for the National Science Foundation's Membranes and Applied Separations Technology Center at the University of Colorado. Reclamation participated in the most recent program review of the Office of Naval Research's membrane program. Reclamation is co-chair with NIST and the University of Colorado for the North American Membrane Society (NAMS) meeting in May. We will also be providing a hands-on workshop with membrane test equipment in our Denver laboratories for the NAMS conference attendees. Reclamation is coordinating and supporting a consortium of membrane producers and users in the development of ultrafiltration characterization techniques by NIST.

DESALINIZATION COSTS

Senator DOMENICI. I wonder, when you mentioned the costs, which it's been obvious forever, since I first came to the Senate, we had a desalinization program going on in Roswell, New Mexico. You might recall that when you were there. It was so prohibitive in terms of cost differential that we stopped it. But I imagine with Israel and others working on it, that we have done better.

Who would be the science and economic expert that we might ask regarding your assessment that you gave us here today of the $2 to $5 cost and the relevance of that in terms of competitiveness? Do you have an expert?

Commissioner MARTINEZ. Yes, we will provide that information for the record.

Senator DOMENICI. Could you have the expert provide us a narrative of what's going on and what they think the next steps are in moving in this area?

Commissioner MARTINEZ. We'll do that for the record.

[The information follows:]

DESALINATION EXPERTISE

We have an expert, Kevin Price in our Denver office, and a staff that supports the desalination program. Competitiveness is determined through the comparison of actual costs of alternative supplies of water determined by a specific community and actual desalination costs. Actual desalination costs are obtained through published information, which has given the cost at the seawater plants at Tampa Bay at $2.09 per thousand gallons, Trinidad at $3.21 per thousand gallons, and Larnaca, Cyprus at $3.30 per thousand gallons. We also obtain current cost data through the communication and coordination with experts within the desalination industry and through professional organizations such as the American Desalting Association (ADA). We have jointly developed, validated, and are selling a cost model with the ADA. This model was created with the assistance of the National Institute of Standards and Technology and ADA desalting experts. It currently focuses on brackish and seawater desalination with membranes; future work will add electrodialysis. ADA is currently negotiating with the International Desalination Association for support to include the costs of thermal desalting technologies.

DESALINATION-NEXT STEPS

The status of desalination today is that there are commercially available processes, reverse osmosis, nanofiltration, distillation and electrodialysis, which the potential user of desalination can select depending on the particular requirements. The Desalting Plant Survey conducted for the International Desalting Association indicates that there were approximately 12,000 desalting plants worldwide at the end of 1997.

Federal funding of desalination research began in 1954 with the creation of the Office of Saline Water and largely ended when the Office of Water Research and Technology closed its doors in 1982. Also in 1982 with the end of Federal funding, a significant patent was issued for a specific type of very efficient membranes. That patent, which was ultimately owned by the Department of the Interior, remains as the basis of today's commercial desalination membrane market.

While significant progress has been made in applying cost-effective desalination technologies, they remain too expensive an option for the majority of small communities in the United States. Specifically, further work is needed to reduce the costs related to the clogging or fouling of membranes, and work is need to find environmentally friendly ways of byproduct or concentrate disposal

While the issues of membrane fouling and concentrate disposal have a high priority, other issues have also been identified by the Desalination Research and Development Program's constituents. They are:

—development of membranes with increased resistance to chlorine,
—development of techniques to reduce surface fouling,
—development of ion- or component-specific membranes for reverse osmosis, electrodialysis or other membrane-based processes,
—increased rates of mass transfer at membrane surfaces,
—development of "leak-proof" recycling treatment technologies for potable reuse,
—standardized membrane integrity tests,
—improved predictive measurements for accurate modeling,
—support and development of innovative processes,
—evaluation of economic and environmental benefits of recovering the byproducts of desalting processes,
—development of more energy efficient systems,
—development of accurate cost models,
—development of non-conventional concentrate disposal methods,
—development of methods to cost effectively recover by-products,
—testing and demonstration to assist in the development of public health and environmental regulations,
—development of tools and resources for planners and engineers.

As progress continues to be made through the research planned in the identified areas, the effectiveness and efficiency of desalination processes are expected to improve. Supporting research funding is essential to achieve these objectives in order to produce more affordable desalinated water supplies that can help meet the nation's current and future potable, industrial, and environmental water supply needs.

ENDANGERED SPECIES RECOVERY

Senator DOMENICI. I appreciate it. I have questions regarding the Carlsbad project with reference to fish and wildlife, but I'll submit it to you for your answers and also one with reference to the endangered species recovery and implementation of that program and your efforts to comply with the so-called biological opinions.

Would you care to just generally comment with reference to those two—that situation, please?

Commissioner MARTINEZ. Yes, Mr. Chairman. Thank you for your assistance over the years on this issue. Generally what we're doing is working with the State of New Mexico on the Rio Grande and the Pecos River to look at long-term operations of the Bureau of Reclamation projects and the Corps of Engineers projects as appropriate. Both of these are underway. The final EISs are a few years down the road.

RIO GRANDE INITIATIVE

But we continue to work with the stakeholders, especially on the Rio Grande. There is a new initiative to put together a conservation plan agreeable to the State as well as the Corps of Engineers, the Bureau of Reclamation and the business community.

The Bureau has taken the lead working with the agencies and the State to coordinate this initiative to maximize the benefits of these projects, at the same time dealing with endangered species issues.

I hope that by this time next year we will have a plan in place that will address some of your concerns about bringing all the parties together and making sure that we don't have duplicate programs in place.

Senator DOMENICI. And that the stakeholders are really talking to each other with reference to having to accommodate somewhat to differing views. Could I ask you, what is the name of the entity that you just described so that I am working with the right one? They were in my office the other day and I assume that's the group that you're talking about.

Commissioner MARTINEZ. On the Rio Grande?

Senator DOMENICI. Yes.

Commissioner MARTINEZ. If not, I'll provide it. I'll provide it for the record.

Senator DOMENICI. We think it's the ESA work group and middle Rio Grande restoration initiative.

Commissioner MARTINEZ. That is the group, but the habitat conservation plan has about six signatories. I'll provide that information for the record.

[The information follows:]

ESA WORKGROUP

You were correct that the group is called the ESA Working Group. They formulated the Habitat Conservation Plan with seven signatories, including the Bureau

of Reclamation, the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, the New Mexico Interstate Stream Commission, the Attorney General of New Mexico, the New Mexico Department of Game and Fish, and the Middle Rio Grande Conservancy District.

FEDERAL GOVERNMENT'S ROLE

Senator DOMENICI. I want to state for the record that with reference to the Rio Grande and the Pecos, I know a little bit more about the Rio Grande, having been born and raised right there. But ultimately, you know, I'm not at all bashful about thinking that the Federal Government might have to come up with some money in the end with reference to an appropriate habitat. The problem is we don't know what to do yet. And I assume when you speak of maybe next year we'll be ready to have a unified effort, you would also be addressing what is the Federal Government's role if we have to provide for the endangered species, what should the Federal Government be doing. Would that part of what's being discussed?

Commissioner MARTINEZ. Yes, Mr. Chairman. I think the foundations are what the Federal Government is doing. On the Rio Grande there was a big debate, as you're aware, as to whether the Secretary of the Interior was going to release water from the upstream reservoirs just by his own action. The position of the Bureau of Reclamation and the Secretary basically is that we will not be releasing water unilaterally from reservoirs across the West. We will be trying to work with Congress or to seek appropriations to acquire water rights under existing State law to address some of these concerns, keeping in mind that the different stakeholders also have to bring something to the table. It's not an entire federally financed project. But if you look at our budget we have money for these kinds of acquisitions. We have a budget request on the Rio Grande and on the Pecos River, and of course, we've been leasing water on the Columbia/Snake River system to the extent of 427,000 acre feet since 1996.

That generally is the direction where we're heading. I will make sure that a report to the Committee on these issues is provided for the record.

[The information follows:]

ENDANGERED SPECIES/WATER ACQUISITION

Reclamation supports the goals and requirements of the Endangered Species Act to conserve threatened and endangered species and avoid actions that might jeopardize the continued existence of these species or destroy their critical habitat.

In regards to conservation, our policy is to participate in the development and implementation of recovery plans for listed species that are affected by Reclamation's projects and actions or where resources under our control are identified in a recovery plan. We also undertake conservation actions to avoid future listings of species. In determining what conservation actions are appropriate for implementation, we consider such things as: species' needs, impacts and benefits to species, funding availability and priorities, costs, authorities, local support, technical feasibility, availability of agency resources, impacts on Indian Trust Assets and the availability of cost-sharing partners. We support using a multi-species/ecosystem approach, where possible, and involving stakeholders from the public and private sectors in developing and implementing conservation plans. Some of the conservation programs that we are presently engaged in are: the Upper Colorado River Recovery Implementation Program, the Platte River Recovery Implementation Program, the Lower Colorado River Multi-Species Conservation Program, and the Central Valley Project Improvement Act implementation. Conservation activities may involve in-

creasing in-stream flows through changes in dam operations and acquisition of water through lease or purchase; and acquiring lands for habitat restoration and protection.

We involve the Fish and Wildlife Service and National Marine Fisheries Service early in project planning or in decisions involving existing operations to determine effects on any threatened or endangered species. For formal consultations, we work with the Services in preparing Biological Assessments, Biological Opinions and Reasonable and Prudent Alternatives that are technically and economically feasible.

RIO GRANDE RESTORATION

Senator DOMENICI. I thank you very much for the way you have attempted to work as an intermediary and to be unbiased and even-handed and to recognize that the State has a genuine interest as you have been doing is really gratifying to this Senator and I commend you for it.

I will begin very shortly furthering my involvement with ESA Working Group and the Rio Grande Restoration Initiative. They've been in my office. I've discussed with them; in fact, we have to all get together and start talking about where we end up. If you think they are a good, workmanlike group, I appreciate that sort of advice and I will begin to work more diligently with them.

Commissioner MARTINEZ. Mr. Chairman, I look forward to working with you down the road as a fellow New Mexican, and I am personally interested in these issues. These issues affect not only the Rio Grande stream system, but they're common to every stream system across the West. If we don't come to grips with them, we are going to be in constant litigation and causing fractionalization among different stakeholders across the West.

ADDITIONAL COMMITTEE QUESTIONS

Senator DOMENICI. Thank you all very much. The questions will be submitted and whenever you can get them answered, we would appreciate it.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTIONS SUBMITTED BY SENATOR PETE V. DOMENICI

DESALINATION

Question. Mr. Commissioner, what is the state of desalination technology today?

Answer. The status of desalination today is that there are commercially available processes, such as reverse osmosis, nanofiltration, distillation and electrodialysis, which the potential user of desalination can select depending on the particular requirements. The Desalting Plant Survey conducted for the International Desalting Association indicates that there were approximately 12,000 desalting plants worldwide at the end of 1997.

Federal funding of desalination research began in 1954 with the creation of the Office of Saline Water and decreased substantially when the Office of Water Research and Technology, or OWRT, closed its doors in 1982. Also in 1982 as a result of OWRT's work, a significant patent was issued for a specific type of very efficient membranes. That patent, which was ultimately owned by the Department of the Interior, remains as the basis of today's commercial desalination membrane market.

While significant progress has been made in cost effectively applying desalination technologies, they remain too expensive an option for the majority of small communities in the United States. Specifically, further work is needed in the public or private sector to reduce the costs related to the clogging or fouling of membranes, and work is needed to find environmentally friendly ways of byproduct or concentrate disposal.

Question. What kinds of research must be undertaken in order to make desalination competitive?

Answer. There are two types of research that could be undertaken: basic and applied. Basic research tends to be expensive and long-term, while applied research tends to be incremental, with shorter-term payoffs. Our current approach in the Bureau of Reclamation's Desalination Research and Development Program is to use the funding available primarily to support applied research projects from bench-scale to pilot-scale to demonstration.

When determining whether or not desalination costs are competitive, desalination costs must compare favorably with fresh water costs. In the past, fresh water sources were much less expensive than desalination. But today, in many cases, there are no good alternatives. Fresh water sources are in many cases over-allocated. Desalination could provide an opportunity to increase the total water supply by purifying impaired waters.

Question. What are the key issues that must be addressed?

Answer. While the issues of membrane fouling and concentrate disposal have a high priority, other issues have also been identified by the Desalination Research and Development Program's constituents. They are:

—development of membranes with increased resistance to chlorine,
—development of ion- or component-specific membranes for reverse osmosis, electrodialysis or other membrane-based processes,
—increased rates of mass transfer at membrane surfaces,
—development of "leak-proof" recycling treatment technologies for potable reuse,
—standardized membrane integrity tests,
—improved predictive measurements for accurate modeling,
—support and development of innovative processes,
—evaluation of economic and environmental benefits of recovering the byproducts of desalting processes,
—development of more energy efficient systems,
—development of accurate cost models,
—development of non-conventional concentrate disposal methods,
—development of methods to cost-effectively recover by-products,
—testing and demonstration to assist in the development of public health and environmental regulations,
—development of tools and resources for planners and engineers.

Question. How is the Desalination Program within the Bureau of Reclamation addressing the critical issues?

Answer. The critical issues are addressed first through communication and planning with the potential users of the technology, e.g. utilities, water management agencies, regulators, equipment suppliers, associations, engineering firms, nonprofit research organizations, and the academic community. From the extensive suggestions of the potential users, research investigations, pilot plants, and demonstration projects are developed with priorities matched to a budget. The priority areas are advertised and contracted through a competitive process to qualified researchers. Upon completion of the work, it is disseminated through conferences, workshops, reports, patents, electronic media, and electronic files available from the Desalination Research and Development Program's website. On a regular basis, the Desalination Research and Development Program is reviewed by outside evaluators and the research is reprioritized.

Question. Is there a research "Road-map" in place to focus available funding on the most critical issues?

Answer. The Desalination Research and Development Program's research road-map is determined through the input of two committees, the Steering Committee and the Technical Review Committee. Both of these committees assist in the implementation of the research process. The Steering Committee is comprised of six non-Reclamation individuals from various desalination constituencies and is chaired by Reclamation's Director of Research. It is responsible for assisting in developing the strategic plan and vision, recognizing unexplored opportunities and assuring the Desalination Research and Development Program meets the intent of Congress. The Technical Review Committee is made up of five highly qualified experts from outside of Reclamation. They make recommendations concerning the research goals and objectives, as well as assisting in the development of research priorities, or road-map. The committees are new for fiscal year 2000. We will have the first Steering Committee meeting April 10, 2000.

The current road-map concentrates funding into five emphasis areas. They were established through extensive input from seven workshops with constituents held between 1989 and 1997. The five emphasis areas are membranes, especially fouling issues, and increased efficiencies; concentrate disposal for inland and coastal plants;

innovative concepts, especially reduced costs for small systems; demonstration, especially for broad regulatory approval and for testing of laboratory/pilot successes; and technology transfer. Currently, Reclamation is partnered with the American Water Works Association Research Foundation (AWWARF) to bring together in July representatives of the membrane industry, academia, design engineering companies, utilities, and regulatory agencies in order to develop a detailed, prioritized list of projects for desalting and water filtration membranes. This list will guide the Desalination Research and Development Program in desalting membrane research and guide AWWARF investments in water filtration membrane research.

Question. Could you give the Committee an idea of the comparative costs between desalinated water and the next lowest alternative?

Answer. Costs for various alternative water supplies vary widely site-to-site. This is difficult to provide an across the board response. The next lowest cost alternative to desalination may be conservation, reallocation of existing resources, or water reuse. Last year, San Diego, California, estimated costs for their limited options to increase water supply as: water transfer costs of $0.84–$1.33 per 1000 gallons, marine transport costs of $1.58 per 1000 gallons, reclaimed water for industry of $2.22 per 1000 gallons. These options are all available on a limited scale, whereas some form of desalination is available on a more widespread basis. A general rule of thumb is that brackish water desalination costs about $1 per 1000 gallons and seawater desalination costs between $3 and $4 per 1000 gallons.

Question. Are there any unusual factors in the Tampa, Florida desalination project that would skew comparisons with that project?

Answer. The Tampa Bay Project will produce water for approximately $2.08 per thousand gallons. The unusual factor in this project is its low cost. Factors in the project that affect the water production cost include sharing infrastructure with the adjacent power plant, a favorable electric power cost, feed water warmed by a few degrees, and a feed salinity about 80 percent of that of normal seawater. These factors would tend to skew comparisons with other facilities.

Question. Under what conditions do you see desalination being feasible for a rural community or small town in an interior location?

Answer. Desalination is used in a number of small communities in the interior, like Buckeye, Arizona, and Las Animas, Colorado, which had no alternative but to desalinate locally available brackish waters. The primary condition that leads to this is the lack of a good water supplies nearby. Decreased desalination costs will make good quality water available for many more such communities.

Question. Why does the budget justification material separate out the Desalination R&D activities from Advanced Water Treatment Desalination?

Answer. The two programs were separated because they represent the needs of two different constituencies. It became apparent during an external program Peer Review in 1998, that the Desalination Research and Development Program was national in scope and should not be used primarily to support research within the agency. The Advanced Water Treatment Program is comprised of research and technology development to specifically address Reclamation's water treatment needs such as rural and Native American water treatment, treatment of irrigation returns, treatment of impaired waters, salinity control through treatment, water reuse, and increasing water supplies with treatment technologies.

Question. How are these two programs different?

Answer. The Desalination Research and Development Program is authorized by the Desalination Act of 1996 and focuses on water purification and technology development. The Secretary of the Interior is designated as the responsible official in this Act, and Reclamation serves as his steward for implementing this national program. The Desalination Research and Development Program serves as a catalyst in accelerating the reduction in cost of desalination technologies through cost-shared, competitive, cooperative agreements. The Advanced Water Treatment Program focuses on Reclamation's needs, using Reclamation's researchers to develop and apply new water treatment technologies that benefit Reclamation projects. The program may use desalination technologies created by the Desalination Research and Development Program. The Advanced Water Treatment Program is carried out under Reclamation's Science and Technology Program using Reclamation's general research authority. Water treatment is undergoing a technological revolution, which is being driven by more stringent drinking water and environmental regulations and an increased need for water. Reclamation must meet these regulations and work to develop additional supplies of water.

Question. Why isn't there a greater non-Federal contribution to this research effort?

Answer. The Desalination Act of 1996, Public Law 104–298, requires that the Federal cost share not exceed 50 percent. Further, it provides that a Federal con-

tribution in excess of 25 percent may not be made unless the project is determined to not be feasible without such increased Federal contribution. Up to $1,000,000 in each fiscal year may be awarded to universities without any cost-sharing requirement. In our Desalination Research and Development Program, the non-Federal contribution from non-academic institutions has varied from 50 percent to 90 percent. While academic institutions are not required to cost share, their cost share has ranged up to 70 percent.

Currently, the majority of contracts have been with more than 16 universities including New Mexico State University, University of Nevada, Montana State University, University of Texas at El Paso, Arizona State University, University of Illinois, and University of Colorado. The Federal funding helps to motivate the best and brightest of the faculty and students to chose to study desalination issues. In the majority of cases, the universities match the Federal funding with in-kind contributions such as use of specialized equipment, facilities, and faculty time.

Generally, the private sector does not fully invest in desalination research because many other areas in their businesses return higher short-term profits. However, we have found that Federal funds attract corporate researchers, and help to justify essential desalination research that may not have an immediate return on their investment.

Question. Would you support increasing the non-Federal cost sharing in this program?

Answer. Yes, we would support increasing the non-Federal cost sharing in this program.

DROUGHT

Question. What is the current drought situation in the West?

Answer. Currently Arizona, New Mexico, Texas, southern California, and Hawaii are experiencing drought conditions, with emergency declarations in-place or expected in the near future.

Question. Has it changed appreciably over the past year?

Answer. Many areas in the southwest are in much worse condition than the previous year due to the previous year's drought conditions, coupled with almost no snowpack or run-off expected in large areas of the southwest this year.

Question. Has the Bureau of Reclamation encountered any problems in using the funding provided by the Congress for drought emergency assistance?

Answer. The Solicitor's Office has informed us that Public Law 102–250 does not authorize financial assistance to cooperating entities for development of drought plans.

Question. Can you detail for the Committee how the additional $2.5 million appropriated over the budget request for fiscal year 2000 has been used to date?

Answer. The table below indicates the use of the funding available fiscal year 2000.

Carryover	$100,000
Fiscal year 2000 Appropriation	3,000,000
Beginning Fiscal Year 2000 Allocation	3,100,000
Underfinancing	−250,000
Subtotal	2,850,000
Program Administration Costs	−100,000
Subtotal	2,750,000
National Drought Mitigation Center, Drought Planning Technical Assistance to the State of Arizona	−40,000
Navajo Nation for Drought Plan	−75,000
Hualapai Nation for Drought Plan	−50,000
Budgeted for Drought workshop in GP Region	−50,000
Technical Assistance to the State of Hawaii for drought planning	−75,000
Funding stakeholder education and public outreach efforts through Western Governor's Association	−10,000
Drought Response Fund Study (Public Law 102–250, Section 205)	−100,000
Unallocated Balance	2,350,000

Question. Do you expect carryover funds into 2001?

Answer. Requests are expected to exceed available funding, therefore we anticipate little or no carryover.

While there is currently an unallocated balance, inquiries for assistance have been received, and we anticipate receipt of formal requests for both emergency and planning assistance in the very near future. Requests are currently in the development phase at the area office level.

Question. Is the $500,000 requested for 2001 plus any expected carryover sufficient to meet your expected needs for 2001?

Answer. As a result of activities related to the National Drought Policy Commission, we anticipate that the number of requests for drought-related assistance could increase due to increased awareness and conditions that currently exist or are being forecast; therefore, our fiscal year 2001 request may well not be sufficient to meet all requests for funding.

Question. Could you explain what emergency authorities are available to the Bureau of Reclamation to help mitigate the impacts of drought?

Answer. Emergency drought assistance is provided through Public Law 102–250, Title I.

Question. The committee has had to extend authority under the Reclamation States Emergency Drought Relief Act on several occasions. Has the bureau given thought to proposing legislation to give Reclamation permanent emergency drought authority?

Answer. The National Drought Policy Commission is currently in the final stages of preparing its report to Congress and to the President. As part of its analysis and recommendations, the Commission is considering the need for legislation to support its proposed National Drought Policy report. We are examining the need for permanent authorization for the Bureau of Reclamation drought-related efforts within this context.

CARLSBAD

Question. The budget request includes $2.1 million for Fish and Wildlife Management and Development activities. Most of the increase over the last year's request is to obtain additional supplemental water. Why is this additional water needed?

Answer. Water is needed to offset Pecos River depletions. Depletions occur when water is bypassed through Sumner Dam to benefit the threatened Pecos bluntnose shiner. In past years, water would have been stored at Sumner Dam or released in such a manner as to incur fewer depletions. However, these operations had negative impacts on the threatened fish.

Question. How much additional supplemental water do you expect you will need in fiscal year 2000 to meet the endangered species requirements?

Answer. The amount of water needed is dependent on the hydrology and weather conditions. It depends on how much we need to bypass at Sumner Dam for the shiner and how much of that water needs to be offset through Reclamation's water acquisition program. We may need as much as an additional 6,000 acre-feet.

Question. How have you obtained any additional water in fiscal year 2000?

Answer. We have leased 2000 acre-feet for fiscal year 2000 from Pecos River pumpers who have non-project water rights. These farmers have agreed to fallow the land. We are continuing our efforts to look at other options and sources to offset depletions.

Question. Have there been and do you expect any adverse impacts resulting from this diversion of this water for support of endangered species?

Answer. The operations in question do not involve diversion of water for endangered species in the Pecos River. Rather, operations of Sumner Dam have been changed to either bypass natural inflow to assist meeting flow recommendations or alter storage release regimes to minimize impacts to the fish. These operations may increase water depletions over the more than 150 river miles between Sumner Dam and the Carlsbad Irrigation District (CID). Reclamation has committed to a program of water leasing and acquisition that will attempt to offset those increased depletions to CID. The adverse impacts of not being able to provide sufficient additional water could include non-compliance with ESA standards, increased vulnerability to lawsuits for non-compliance, and payment to the State of New Mexico of $106 for each acre-foot of depleted water not offset as required. This latter measure is required by our cooperative agreement with the State of New Mexico Interstate Stream Commission.

Question. Can you give the Committee some idea of the estimated total cost and length of time it will take to fulfill the requirements of the Biological Opinion on the Pecos River?

Answer. The Fish and Wildlife Service requested that target flows not fall below a certain level. The amount of water needed varies from year to year with the hydrologic conditions. We will need to supply supplemental water as long as fish need

it. We cannot estimate time or cost because of dependence on available water. However, Reclamation, CID, and the State of New Mexico are working jointly to mesh river operations, Biological Opinion requirements, Pecos River Compact delivery obligations, New Mexico State Engineer water rights administration and other pertinent requirements.

ENDANGERED SPECIES RECOVERY IMPLEMENTATION PROGRAM

Question. Mr. Commissioner, can you explain to the Committee your legal obligations to comply with Biological Opinions issued by the Fish and Wildlife Service?

Answer. Section 7 of the Endangered Species Act requires each Federal agency to assure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any listed species. To do so, agencies consult with the Fish and Wildlife Service or with the Commerce Department's National Marine Fisheries agency, as appropriate on any action which may affect endangered species. If the Service determines the action is likely to jeopardize the continued existence of the species, the Service recommends reasonable and prudent alternative to the original action. Reclamation generally works cooperatively with the Services to develop an acceptable reasonable and prudent alternative and then accepts and implements each Biological Opinion. The consequence for not accepting it could be jeopardy to the species and potential litigation.

Question. Does the Bureau of Reclamation ever put forth a definitive recovery plan with firm costs and schedules for implementation?

Answer. Technically, the Fish and Wildlife Service is responsible for development of Recovery Plans for a particular species. The Fish and Wildlife Service will nominate and approve experts to serve on a "Recovery Team". This team may be represented by various private, state, and Federal agency technical members. The Recovery Team develops a Recovery Plan for the specific endangered species. In some cases, portions of a Recovery Plan may be adopted as part of Reasonable and Prudent Alternatives for various proposed Reclamation actions.

The key issue is that a Recovery Plan is developed by a Recovery Team established by the Fish and Wildlife Service, not by Reclamation alone. Reclamation does, on an annual basis, establish funding and schedule estimates to implement Reasonable and Prudent Alternatives and in some cases those Reasonable and Prudent Alternatives involve elements of a "Recovery Plan". Eventually such a "Plan" will be accomplished and the species will be recovered. Each Reclamation project or program with a biological opinion updates the costs associated with the opinion, at least annually, while preparing the budget for that project or program.

Question. I understand that legislation has been proposed that would require non-Federal cost sharing for capital improvements related to endangered species recovery activities in the Upper Colorado and San Juan River Basins. What is the Administration's position on this legislation?

Answer. The Department testified in support of H.R. 2348, the House version of this legislation last October, with amendments to address some concerns. The Administration believes the legislation is critical to the continued recovery of the four species of endangered fish and to future successful water management for multiple uses.

Question. What are your concerns, if any?

Answer. During its testimony, the Department noted concerns about two aspects of the bill. The first was that Section 3(e) "Authority to Retain Appropriated Funds," is not only unnecessary, but may also unduly restrict Reclamation's ability to manage its program. In addition, the Administration has policy and PAYGO concerns with allowing power revenues to be used to both write-off debt to the Treasury and at the same time be redirected to fund new investments. The Department would like to work with the Congress to address these concerns, so that the legislation might be enacted.

Question. Do you support the idea that non-Federal interests should bear a greater portion of these fish and wildlife costs?

Answer. Reclamation is very supportive of all program participants providing financial and other support to the program roughly proportionate to the benefits they receive.

Question. What is the position of the affected States on increased cost sharing?

Answer. Recognizing the program is best accomplished cooperatively, the states developed and support the cost share formula proposed in the legislation.

MIDDLE RIO GRANDE

Question. The budget request for Fish and Wildlife Management and Development on the Middle Rio Grande Project increases by 56 percent over fiscal year 2000 re-

quest. Mr. Commissioner, the Bureau of Reclamation continues to spend increasing amounts of money on studies, coordination, data collection and computer models.

Is there a plan for the recovery of the Rio Grande silvery minnow?

Answer. Yes, the official recovery plan was issued by the Fish and Wildlife Service in July 1999. Reclamation is an active participant in recovery efforts, including development of a Habitat Conservation Plan.

Question. When do you expect to finalize a plan, and what do you expect it to cost?

Answer. The final recovery plan was issued in July 1999. The estimated cost of the plan is $6,950,000 over a five year period.

Question. How much additional water do you expect will be needed to support the recovery plan?

Answer. Depending on actual water supply and weather conditions an additional 50,000 to 100,000 acre-feet of water could be needed each year.

Question. How much additional water do you expect will be needed in fiscal year 2000 to support the recovery plan?

Answer. We anticipate that over 50,000 acre-feet will be needed in fiscal year 2000.

Question. How and from whom will this water be obtained?

Answer. We have obtained 38,000 acre-feet from current contractors of San-Juan Chama Project water. The remaining water will have to be found from undefined sources.

Question. Do you have an agreement with the State of New Mexico regarding the additional water for fiscal year 2000 and any additional needs for fiscal year 2001?

Answer. The Bureau has discussed with the State of New Mexico and others the additional amount of water that might be required in fiscal year 2000 and fiscal year 2001 to support the recovery plan, but we do not have a formal agreement with the State.

RIO GRANDE

Question. I note that funding is being requested to initiate "clean water activities and silt research" studies on the Rio Grande Project. Why is this work required and what is the estimated cost and schedule for completion for this work?

Answer. Water quality activities including research efforts at Elephant Butte and Caballo Reservoirs will begin in fiscal year 2001. The funding requested for fiscal year 2001 for these efforts is $85,000. The total estimated cost and schedule for the efforts are not available until current investigations are completed.

Question. What is the current status of the adjudication of water rights in New Mexico and Texas?

Answer. There are three distinct legal cases involved with Rio Grande Project water rights. The New Mexico State Court continues its hydrology committee activities and issuance of the year 2000 hearing schedule. In the quiet title case the United States District Court on November 30, 1999, issued a Memorandum Opinion and Order staying mediation and allowing the litigation of this matter to proceed. The Texas Natural Resource Conservation Commission continues to be on hold with its administrative hearings pending outcome of the other two cases.

Question. Has there been any movement or progress over the past year?

Answer. Yes, the United States team views the progress made with the majority of the parties during mediation in the quiet title case as significant.

Question. Why has the development and use of the Upper Rio Grande Water Operations model been delayed an additional 2 years?

Answer. With the increasing demand for water among competing uses, it has become necessary to develop more sophisticated methodologies related to water accounting. A draft operations model is currently being used for the Annual Operating Plan and will be tested side by side with existing accounting methods i.e., manual data input to spreadsheets, etc. As more is learned about the hydrologic characteristics of the Rio Grande Basin, the Upper Rio Grande Water Operations Model, referred to as URGWOM, has continued to evolve to take full advantage of the additional data. Efforts to incorporate the emerging legislative constraints into the URGWOM have led to the development of more sophisticated methodologies which will enable URGWOM end users to make more informed and better decisions in a more timely manner.

Question. Is your work funding constrained, and if so, what is your funding capability for fiscal year 2001?

Answer. We have received adequate funding in the past, but we have a capability in fiscal year 2001 of an additional $300,000 to accelerate continuation of collaborative efforts with other agencies and stakeholders, model refinements as deemed

necessary, and continue work on database development, end user support, model implementation, testing and calibration, and ongoing data collection efforts for the URGWOM.

Question. How important is this operational model to the water quantity and quality studies of the Bureau of Reclamation?

Answer. The URGWOM is becoming increasingly essential to the daily water operations because of the enlargement of the number of involved and vested parties, the amount of data, the complexities of the issues, and the demand for water . The ability to analyze and respond quickly to competing demands for water requires analysis tools like the URGWOM. As more data is made available that affects water supply within the basin, the URGWOM will play an even more important role with its ability to analyze this data and allow decisions makers to more quickly assess the impacts of operational decisions and respond accordingly.

TAOS WATER SUPPLY STUDY

Question. What is the current status of the Taos Water Supply Study?

Answer. Environmental compliance and negotiations among the main parties on how to spend the money have been completed as well as putting the cooperative agreements in place. Drilling of one of seven wells for the city has been completed. Additional work on some of the non-drilling components of the project, such as water planning, budgeting and prototype projects, is in progress.

Question. When will this work be completed?

Answer. The additional wells and the non-drilling components should be completed by the end of this calendar year.

Question. Have there been any delays in the completion schedule since last year? If so, please explain.

Answer. Upon initial receipt of funds, no firm completion schedule was established. We had hoped for perhaps a May 2000 completion. The time needed for environmental compliance and agreement among all parties delayed the initial contract award. There have been no drilling delays other than the expected shut down for the winter months. We now anticipate completion by December 2000.

SUBCOMMITTEE RECESS

Senator DOMENICI. We stand in recess until March 28th when we will have the DOE testify on defense programs.

[Whereupon, at 11:55 a.m., Tuesday, March 21, the subcommittee was recessed, to reconvene subject to the call of the Chair.]

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2001

TUESDAY, MARCH 28, 2000

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 10:15 a.m., in room SD–124, Dirksen Senate Office Building, Hon. Pete V. Domenici (chairman) presiding.

Present: Senators Domenici, Gorton, Craig, and Reid.

DEPARTMENT OF ENERGY

NATIONAL NUCLEAR SECURITY ADMINISTRATION

STATEMENTS OF:

GEN. THOMAS F. GIOCONDA, ACTING DEPUTY ADMINISTRATOR, DEFENSE PROGRAMS, PRINCIPAL DEPUTY ASSISTANT SECRETARY FOR MILITARY APPLICATIONS

ROSE GOTTEMOELLER, ACTING DEPUTY ADMINISTRATOR, ATOMIC ENERGY DEFENSE AND NONPROLIFERATION PROGRAMS

ADM. FRANK L. BOWMAN, DIRECTOR, NAVAL NUCLEAR PROPULSION PROGRAM

GEN. EUGENE E. HABIGER, DIRECTOR, SECURITY AND EMERGENCY OPERATIONS

OPENING STATEMENT OF SENATOR PETE V. DOMENICI

Senator DOMENICI. The hearing will come to order. I understand everybody is busy, so I guess our goal ought to be to expedite things this morning.

This is a very, very important set of witnesses, and I have a few opening remarks. We will then proceed as quickly as we can and, if any one has any remarks after I am finished we will hear them.

The subcommittee is going to consider the fiscal year 2001 budget request for the National Nuclear Security Administration [NNSA] covering defense programs, nonproliferation, and naval reactor programs this morning. This is the first appearance of the new NNSA before this committee, and I am very pleased to have you here. Combined, these programs account for $6.2 billion of the $18.1 billion requested for the Department from this subcommittee and representing the core of its national security functions of the Department of Energy. The request represents an increase of $224 million over comparable levels last year, a 3.7 percent increase from the current level.

The defense and nonproliferation programs together are the backbone of our strategic nuclear deterrent, on the one hand reducing the threat to our Nation posed by other weapons of mass destruction and, on the other hand, maintaining our deterrence against the threat that remains.

We are considering the programs together because they are interrelated. If, for example, in the coming decade we made rapid progress on the disposition of plutonium and uranium in Russia and our ability to verify our potential adversary's stockpile levels, we may be able to reduce our nuclear stockpile. Conversely, lack of progress in those areas will prevent us from pursuing stockpile reductions. At least, many people think that.

STOCKPILE STEWARDSHIP PROGRAM—30-DAY REVIEW

I would like to make an additional comment about the stockpile stewardship program before we proceed. During the Comprehensive Test Ban Treaty debate last year there was testimony from committed and well-respected public servants that the science-based stockpile stewardship program was underfunded and under stress. Stress was a word that was used.

Thereafter, Secretary Richardson ordered a comprehensive, internal 30-day review of stockpile stewardship. Frankly, I did not think 30 days and a review internally would produce anything very significant, but that is not for me to say. It turns out it did produce something rather significant, and there is no question that the review concluded that the stockpile stewardship program was on-track, but that, "additional pressures such as increased security requirements, newly discovered stockpile issues, and resource limitations have collectively forced the program overall to be wound too tight," with "too little program flexibility for contingencies." All of the last words I have cited are in quotes from that report.

My review of the study leads me to the conclusion that we are not on schedule, given the current budget to develop the tools and technologies and stockpile base to refurbish our weapons and certify their safety and reliability for the stockpile. Further, a successful stewardship program requires qualified and motivated nuclear weapons experienced personnel, a very serious problem, well-noted in the 30-day review, an indication we had better do something about retaining the scientist we have and finding new ways to encourage others to the program.

INFRASTRUCTURE REQUIREMENTS

Second, modern and well-maintained facilities, the special experimental and computational facilities needed for stewardship in the absence of testing and a sound management structure, each year we continue to lose to retirement our most experienced designers and most highly skilled technicians, and we all understand recruiting and retaining the next generation of nuclear weapons stewards has been made more difficult by resource constraints, fewer opportunities for exploratory research, and diminished morale from a perceived lack of confidence in nuclear weapons scientists. At least some of them pursue that.

DOE has failed to keep good facilities. This report suggests that we had better do something about that. The 30-day review said we

have a huge bow wave of deferred improvements. For example, 70 percent of the facilities at Y–12, 80 percent of the facilities at the Kansas City plant, 40 percent of the facilities at Pantex, and 40 percent of Savannah River's tritium facilities are more than 40 years old.

The Department has experienced tremendous difficulty in constructing its special experimental computational facilities within budget and within schedule. The National Ignition Facility is only the most recent example.

Now, I am delighted that we are going to spend time today exploring the needs and potential problems and issues facing the weapon complex. If we need you again we will call on you informally. We are going to hear from the Department of Energy's Office of Security and Emergency Operations, the Naval Nuclear Propulsion Program, and then we are going to go to our Acting Deputy Administrator for Defense Nuclear Nonproliferation. It is good to have you with us. And finally, General Habiger of the Department's Office of Security and Emergency Operations.

I note the presence of our Ranking Member from Nevada, Senator Reid, and I started a bit late, for which I apologize.

STATEMENT OF SENATOR HARRY REID

Senator REID. Boy, was I ever glad you were late, though. I know, Mr. Chairman, you have tremendous responsibilities, especially this time of year with the Budget Resolution that is due out any day now, and so I am going to summarize my statement and ask permission to place some of my questions and materials in the record.

I have several concerns, most involving defense programs side of DOE. I had a recent discussion with Secretary Richardson about most of them, so I will not go into any great detail at this time. However, as we move forward with program funding for fiscal year 2001, I hope most of these issues can be resolved.

NATIONAL IGNITION FACILITY

First and foremost, I am concerned about the NIF, the National Ignition Facility. This program is substantially behind and well over budget. I understand this subcommittee is likely to receive a new NIF cost and schedule baseline in the coming weeks for those of you new to Washington, a new baseline is code word for hundreds of millions of dollars additional cost. Needless to say, I am not comforted when I read sentences like the following in your testimony we have reviewed already:

"The NIF task force believes, however, that with appropriate corrective actions, a strong management team, additional funds, and extension of the schedule and recognition that NIF is at its core a research and development project, the NIF laser system can be completed."

NIF has been sold to this subcommittee as the cornerstone of this Nation's stockpile stewardship program, not as some long-term lab full employment program. I am pleased that there has been an offer in some of the testimony to work with Congress on this issue. Suffice it to say that I am going to take a great deal of convincing at this stage.

To me, Mr. Chairman and members of the subcommittee, the project is beginning to remind me of the Superconducting Super Collider and, as we all know, that project is dead now. I think that there is going to have to be some tremendous work done by a lot of people to keep this program going, because I do not think it would take a great deal on the Senate floor to kill this project, and I think—I only speak for myself. I am terribly disappointed how this subcommittee has been treated. I think we have been misled.

MEGASTRATEGY FOR DEFENSE PROGRAMS

Second of all, as you are aware, Senator Domenici—and I put language into last year's energy and water conference report that more or less codified the so-called megastrategy. Part of that strategy involved moving the Atlas pulse power facility from Los Alamos to the Nevada Test Site. This megastrategy I guess has collapsed, and I am not convinced that anything has yet filled that void.

I would appreciate a detailed, written response outlining the direction the new Defense Programs is planning to take. None of this is to suggest that I have softened in my resolve to see Atlas moved. Quite the opposite. I thought it was the right thing to do last summer, and I still feel that way.

[The information follows:]

MEGASTRATEGY

The term "megastrategy" or "integrated strategy" is an official, short-hand reference to a suite of long-term actions that have been under consideration by Defense Programs to achieve more effective mission and resource integration within the sites and programs supporting the Stockpile Stewardship Program. A broad outline of the concept was informally articulated in the summer, 1999. The strategy looked at several factors including various weapons complex capabilities, options to rebalance workload, elimination of duplication between sites, concentration of efforts in centers of excellence, and increased attention to needed investments in infrastructure in some areas.

Consistent with direction from the Congress in the fiscal year 2000 legislation withholding authority to fully implement the integrated strategy, several actions have been undertaken. The transfer of activities supporting the W80 weapon system from the Los Alamos National Laboratory (LANL) to the Lawrence Livermore National Laboratory is still under discussion both internally and with the Department of Defense. The consolidation of major hydrotesting capabilities at LANL is also being considered. A conceptual design for the Microsystems and Engineering Sciences Applications (MESA) facility at the Sandia National Laboratories in Albuquerque is underway, and it is proposed in the fiscal year 2001 budget as a candidate project for preliminary design funding. The PEGASUS machine has been transferred from LANL to the University of Nevada. The Department has conducted further analysis of the ATLAS facility at LANL, and has concluded that its construction should be completed and the facility put in cold standby, pending clarification of its future role in the weapons research programs. Moving the facility to a location in Nevada is also under consideration as a potential option. Another aspect of the integrated strategy sought to focus increased attention on the infrastructure improvements needed at the production plants. A complex-wide study of recapitalization needs is now underway to couple it with the fiscal year 2002 budget formulation and beyond.

UTILIZATION OF THE NEVADA TEST SITE

Senator REID. My final thoughts today have to do with the decision-making process, how the decision-making process works within Defense Programs. It is increasingly difficult for the weapons labs to get permission to do risky experiments at their sites due to urban encroachments, public health and safety risks, threats to the

environment. Nevertheless, by all accounts the labs continue to push for more and more test facilities of this sort. Ultimately, these will prevent continued operations at any place other than the Nevada Test Site.

The test site is a place where these experiments and activities that cannot take place any place else should be conducted. That is why it is there. Unless the Nevada Test Site as utilized is maintained as a healthy and viable part of the stewardship program, the Federal Government will have to replicate these experimental facilities at great cost and even greater difficulty.

This all seems simple enough to me. Do dangerous activities and experiments in a place where the danger to the public and environment is lowest and do what you need to do to maintain that place properly.

My concern is that is not what is happening. DOE is doing the same things the same way they always do, despite dramatic changed conditions. So again, Mr. Chairman, I would appreciate a detailed, written discussion of what the Department is doing to prepare for the day when it becomes impossible to perform the dangerous activities and experiments at the labs due to the encroachment that I have talked about.

People raise the health, safety, and other concerns, and I have a lot of other things to talk about, but I would ask your permission to insert that in the record.

[The information follows:]

URBAN ENCROACHMENT ON LABORATORIES

All Defense Programs facilities and activities, including those at the laboratories, can be safely conducted at their current locations for the foreseeable future. Hazards associated with all our facilities and activities have been analyzed to assess their potential impact on the public, workers, and the environment during both routine operations and in hypothetical accident scenarios. The physical location of hazards relative to the public is specifically considered in these analyses. These analyses are reviewed continuously to assure that changes in work, hazards or safety requirements are addressed. Safety features including engineered systems, procedures and other controls are in place to assure compliance with applicable public health and safety requirements.

In the unlikely event that a safety requirement can not be met, operations are suspended and a review is conducted immediately to determine a path forward. Many options exist to restart operations, including redesigning the work, implementing new controls or moving the most hazardous portion to a better suited facility or more remote site such as the Nevada Test Site. The Nevada Test Site is being maintained not only as part of readiness to resume underground testing, if necessary, but to support the experimentation programs conducted at the site, including the subcritical experiments and the hydrotesting at the Big Explosives Experimental Facility, and work performed at the site for others such as the Defense Threat Reduction Agency.

Senator DOMENICI. You've got it.

Senator Craig.

Senator CRAIG. Mr. Chairman, my statement will come in the form of questions, so why don't we proceed with the testimony.

Senator DOMENICI. Senator, I want to thank you for your interest. This is a very important subcommittee, and frequently nobody is around, and sometimes I need some people around. There are some tough decisions to be made this year, and so I need the counsel of Senators like you. I just cannot write this bill this year alone and in a vacuum. It is very, very difficult.

Senator CRAIG. I appreciate you saying that. It is an important issue for me and for my State and for the Nation. That is why I am here.

Senator DOMENICI. We will proceed now with you, General Gioconda. First of all, let me say you succeed a very exceptional person who actually is the father of stockpile stewardship, Vic Reis. I am sorry, in the last few months, that you and I have not been able to meet as often as I used to meet with Dr. Reis to talk about what we are doing. But from what I am hearing, you are working diligently and doing a good job.

You have some prepared remarks. They will be made a part of the record. You may proceed as you wish in terms of your testimony, but even without a light up here, let's kind of shoot for no more than 10 minutes.

General GIOCONDA. That is where I think I have it, if I do not linger.

Senator DOMENICI. All right, proceed.

STATEMENT OF THOMAS F. GIOCONDA

General GIOCONDA. Good morning, Mr. Chairman and members of the subcommittee. I am pleased to report to you today that stockpile stewardship is working to ensure the continued safety and reliability of America's nuclear deterrent.

Our nuclear deterrent remains the cornerstone of this Nation's defense. The highly trained men and women working in our production plants and weapons laboratories possess the critical nuclear weapons skills needed to support the stockpile. Your ongoing support for their stewardship program is absolutely essential for its continued success. If approved by Congress, our supplemental will also provide funds needed by the production sites to cover work load costs and stabilize our highly skilled workforce.

STOCKPILE STEWARDSHIP—30-DAY STUDY

Before I get into the details of the fiscal year 2001 request, I would like to draw your attention to two developments impacting the stewardship program. First, as you stated, Mr. Chairman, at the Secretary's direction we undertook a comprehensive internal review of the Stockpile Stewardship Program last November. This detailed review was led by Under Secretary Dr. Moniz.

I will not repeat your summary, Mr. Chairman, but this review concluded that the program was on track and developing the science, technology, and production capabilities needed to support the stockpile. Several of the findings will help us to shape future decisions that are needed in the program. In this effort, we must continue to prioritize investment schedules and resources.

The program faces challenges, and there are 15 specific actions that emerged from the report's findings. We are aggressively working these action items to further strengthen the program. Key among these is the need for the DOE and the DOD to refine our process for determining the scheduling of stockpile refurbishments over the next several decades to take into consideration military, human, and budgetary needs. We are working with DOD right now to address this issue.

REVISED BUDGET STRUCTURE

Second, we have a new business strategy for the Stockpile Stewardship Program. We have transitioned from the old paradigm of design, test and produce to an environment of maintaining the safety, security, and reliability of our current weapons with advanced science and manufacturing techniques. We needed a new business strategy to support our new business approach. We feel this is a superior approach, as it provides more visibility into our program and, quite frankly, gives us a better means to integrate and balance the competing needs of the program.

The major elements of this new approach are Directed Stockpile Work [DSW] that encompasses all activities that directly support the specific weapons in the stockpile, as directed by the nuclear weapons stockpile plan of the President. It covers all the activities to support the day-to-day needs of the stockpile. DSW work occurs across the entire weapons complex.

Next, we have Campaigns, which are the technically challenging research and development programs designed to provide us with the critical science and engineering capabilities needed for the certification of the nuclear weapons stockpile over the long term. Campaigns have definitive milestones, work plans, and specific end dates. There are currently seven campaigns which are being conducted across the complex.

Finally, infrastructure, which you mentioned, Mr. Chairman. Our facilities must be in a safe, secure, and reliable operating condition to support our work. This category also includes our new construction work, our transportation system for moving components and weapons safely and securely through the complex, and our Federal staffing that provides the oversight of the program.

FISCAL YEAR 2000 SUPPLEMENTAL BUDGET REQUEST

Let me talk a little about the fiscal year 2000 supplemental that is before you. Our supplemental of $55 million is targeted to the Y–12 plant in Tennessee, the Kansas City plant, and the Pantex plant in Texas. The funding, if approved, will allow us to meet increased work load requirements related to weapons refurbishment, upgrade the enriched uranium infrastructure at Y–12, and avoid lay-offs of critically skilled personnel at the three locations. These are unique assets that must be protected. The fiscal year 2001 request is predicated on getting this important supplemental in fiscal year 2000.

ADVANCED MANUFACTURING TECHNOLOGY

I have some examples of the fine work done by Sandia National Labs to show you today. This safety device is a strong link switch designed by Sandia and manufactured by Kansas City. It is employed in a number of weapons in today's stockpile, and is designed to prevent detonation in the highly unlikely event that a weapon is involved in an accident. Almost 500 pieces make up this strong link switch.

Sandia is examining advance technology——

Senator DOMENICI. Would you repeat that one again? I'm very sorry.

General GIOCONDA. Sir, this is a strong link switch, and it is designed by Sandia and is manufactured by Kansas City. It is employed in many of our weapons today, in today's stockpile, and it is designed to prevent detonation in the highly unlikely event that a weapon is involved in an accident, and in this little box is almost 500 pieces that make up the strong link to prevent a detonation. Sandia is examining advanced technologies to reduce the size and number of parts in the strong link.

This smaller prototype will fit into detonators of existing weapons. Future strong links like this, using microsystem technology, decreases the size, and would enable our scientists and tech engineers to place these devices anywhere in the weapons system, further improving safety of the stockpile. This is what we are doing today, and this is what we can do in the future. These examples give you an idea of how the technology is advancing. This is but one example of the 6,000 parts that make up a nuclear weapon. These parts must be expertly managed, studied, and produced.

FISCAL YEAR 2001 BUDGET REQUEST

Our fiscal year 2001 overall budget request of $4.6 billion is about 6 percent greater than our fiscal year 2000 appropriation. The major reasons for this increase are a significant fraction of the Nation's nuclear arsenal, the W–80 and the W–76, are scheduled for refurbishment over the next decade. Work associated with these two weapons systems will constitute the majority of directed stockpile work. We must meet the schedules of these activities, including the development of scientific capabilities required to certify those weapons without testing.

We are working with the DOD to identify and assess the final technical drivers and schedules for weapon component replacement or certifiable modifications. We are also making significant security improvements in our transportation system used to transport components, materials, and actual weapons within the complex. We are requesting a few new construction line items in the fiscal year 2001 budget also.

The preliminary project design and engineering pilot program is a new initiative with about $15 million to fund preliminary design before setting the hard baseline in asking for construction approval, similar to what DOD does in design completion. Several candidate projects are proposed. We believe this will provide an improvement in our project management system.

We also have three other new projects, one at Pantex, the Weapon Evaluation and Testing Laboratory; a new storage facility for highly enriched uranium at Oak Ridge Y–12; and a Distributive Information System at Sandia. In total, however, our construction request is down from 2000.

NATIONAL IGNITION FACILITY

While I am on the topic of construction, let me say a word about the National Ignition Facility [NIF]. As many of you know, the project has encountered significant technical issues in assembling and in stalling the laser infrastructure. Let me emphasize that the problems with NIF are not scientific. A new baseline will be submitted to Congress by June 1, 2000 as required. The previous fund-

ing plan for NIF has been included in this budget, which reflects the majority of the decrease in construction.

I would like to point out one last but important area of growth. Even though it only represents 1/10th of 1 percent of my budget, we are developing a plan that will focus on building and sustaining a talented, diverse workforce of Federal R&D technical managers, as recommended by the Chiles Commission plan.

The plan will include innovative recruiting strategies, retention incentives, and comprehensive training and development programs of new and current employees. We also have included resources to reengineer our organization to place employees closer to where the work is accomplished and streamline some of our outmoded administrative functions.

STOCKPILE STEWARDSHIP ACCOMPLISHMENTS

Our 2001 budget request will allow us to build upon a significant list of accomplishments that you mentioned, Mr. Chairman, in the Stockpile Stewardship Program as compiled over the last several years. Let me just review a few others. First, and most important, we have completed three annual certifications and expect a fourth shortly. Secretary Cohen signed off on the certification letter last Wednesday, and Secretary Richardson now has the package for his review and signature and I believe he will complete it by the end of the week.

Through the continuing success of the Stockpile Stewardship Program, we have been able to support the Secretary of Energy in joining with the Secretary of Defense in certifying that the nuclear weapons stockpile is safe and reliable, and there is no requirement for underground testing at this time.

ACCELERATED STRATEGIC COMPUTING INITIATIVE

Last month, we announced the first ever three-dimensional simulation of a nuclear weapon explosion using our ASCI Blue Pacific computer at Lawrence Livermore National Lab. To get a sense of the complexity of this calculation, it took our Blue Pacific machine some 20 days to run the calculation. It would have taken an average desktop machine over 30 years to do the same. This is important, because as our weapons get older, the problems are expected to get harder, and we must have ready more sophisticated tools, and the people to allow our assessment of whether our weapons will continue to be safe, secure, and reliable. Our ASCI program is key to that requirement.

PIT PRODUCTION

As you may recall, we decided in 1996 to reestablish limited capability to produce plutonium pits at Los Alamos National Laboratory, which was necessary with the closure of Rocky Flats. We have now fabricated four development pits. While many other scientific and production steps are needed to verify the quality of the pits produced, this is a very positive sign. We plan to have a certifiable pit by 2001.

The subcritical experiment program at the Nevada Test Site continues to provide important data for the stewardship program and

maintain test readiness as directed by the President. Last week, the Nevada Test Site team successfully executed the Thoroughbred experiment. Data from this experiment will be used to compare the plutonium manufacturing process used at Rocky Flats with those being developed today at Los Alamos to make sure we are on the right track.

The Department also plans to undertake a preconceptual study of a pit production facility during fiscal year 2001. This study will build on earlier work done by DOE. Based on our ongoing pit aging studies from our campaigns, we believe that we have at least a 15-year lead time for the construction of a pit manufacturing facility. Our overall course of action on pit manufacturing has been reviewed and approved by the Nuclear Weapons Council and will continue to be, since it's so essential.

TRITIUM PRODUCTION

Our tritium program is making significant progress. We signed a 35-year, $1.5 billion agreement with the Tennessee Valley Authority for the irradiation of tritium iridium producing burnable, absorber rods. With this in place, we now have three reactors, Watts Bar and both Sequoyah units available for tritium production. We expect to break ground at the Savannah River site this summer for construction of the Tritium Extraction Facility. This facility will begin to deliver tritium gas to the stockpile by 2006.

With the success of the commercial light water reactor program and other competing financial demands on other parts of Stockpile Stewardship, DOE has been forced to redefine the work associated with the Accelerator Production Tritium [APT] program. We will continue limited engineering development and demonstration activities at Los Alamos National Lab as well as work with other parts of DOE to develop a joint program for the many other uses of APT technology.

We are also accomplishing our life extension requirement for the W87 involving principally Kansas City, Y–12, and Pantex, and have produced the first neutron generators at Sandia since the close of the Pinellas plant in the early nineties.

CONCLUDING REMARKS

Mr. Chairman, over the last 5 years the Stockpile Stewardship program has made significant scientific and technical advances, strides that many of our critics and even some of our supporters doubted we could achieve. These accomplishments increase our confidence that the men and women of the stewardship team will be able to meet the scientific and engineering challenges of stewardship in the decades to come.

PREPARED STATEMENT

These challenges include: meeting the requirement for nuclear deterrence, our primary job; attracting and retaining a preeminent nuclear team as many people reach retirement age; certifying replacement pits; producing tritium; and implementing new security standards. Our ability to meet these and other challenges is dependant on your continued support and the support of this com-

mittee of our budget for this vital national security program and our aggressive Federal management.

Thank you.

[The statement follows:]

PREPARED STATEMENT OF GEN. THOMAS F. GIOCONDA

Mr. Chairman and distinguished members of the Subcommittee, thank you for the opportunity to testify on the Department of Energy (DOE) National Nuclear Security Administration's fiscal year 2001 budget request for Defense Programs' Stockpile Stewardship Program. This request of $4.594 billion represents a 6.3 percent increase over the comparable fiscal year 2000 level. Due to mission transfers out of the weapons activities account, this request is roughly comparable to a program level of about $4.7 billion, using previous year comparisons. A detailed summary of the fiscal year 2001 request for Defense Programs is included near the end of the statement.

As part of the fiscal year 2001 budget process, the Administration is also requesting supplemental funding for fiscal year 2000 in the amount of $55 million to address shortfalls in production readiness at the Kansas City, Pantex, and Y–12 plants. Provision of this supplemental funding is essential to maintain employment levels and skills necessary to support important workloads in fiscal year 2000 and future years and we appreciate this subcommittee's support for our request.

With your support, the program, to date, has achieved some major milestones as we move from underground nuclear test-based to science-based nuclear weapons assessment and certification. Most notably, we are about to certify, for the fourth consecutive year, that the safety, security and reliability of the nation's nuclear weapons stockpile is assured without the need for underground nuclear yield testing at this time. This fourth annual certification of the nuclear weapons stockpile will be transmitted to the President by the Secretaries of Energy and Defense shortly. The people, tools, and technologies supported by this budget make this accomplishment possible.

Our nuclear deterrent remains the foundation for U.S. national security. We believe that our accomplishments and the new budget and management structures we have put in place, along with your continued support, will maintain the success of the Stockpile Stewardship Program in serving our supreme national interest.

MAJOR CHANGES IN PROGRAM PLANNING AND BUDGETING

The men and women of the Stockpile Stewardship Program continue to meet formidable challenges with ingenuity and innovation both in the way we do science and manufacturing, and in the way we organize the work we do. Without the critical work of our "stockpile stewards" at the labs, plants and in the federal structure—no program will succeed. Our people remain our number one resource that must be carefully attended now and into the future.

During the past year, for the first time ever in the weapons program, we have organized our tasks according to a streamlined business model. Quite simply, in a world where competition for budget resources is intense, we need to be able to demonstrate clearly that we are taking every step to operate in a cost effective manner—we must use metric that both the folks inside and outside of the program can use to measure our progress.

Our budget request is based on planned performance. It is the outcome of planning processes that focus our efforts on specific performance goals and strategies that flow from strategic planning. The cycle of planning, budgeting, program execution, and evaluation is the foundation of our program's accomplishments and our initiatives to improve management and accountability to the public.

The fiscal year 2001 budget reflects a new budget structure, which is part of the implementation of the National Nuclear Security Administration. The structure emphasizes the integrated nature of the Stockpile Stewardship Program, and is built upon three principal elements: Directed Stockpile Work, Campaigns, and Readiness in Technical Base and Facilities. Overall, these changes reflect our vision for the future of the program and the nuclear weapons complex.

The fiscal year 2001 budget request is presented in the proposed budget and reporting structure. A more technical discussion of all aspects of the proposed budget structure change is included as an appendix to the Executive Budget Summary document. We are continuing to execute the fiscal year 2000 budget in the current "old" structure as it was appropriated; however, we are also collecting data unofficially in the new structure as a further check on the viability of the approach.

Directed Stockpile Work encompasses all activities that directly support specific weapons in the nuclear stockpile as directed by the Nuclear Weapon Stockpile Plan. These activities include current maintenance and day-to-day care of the stockpile as well as planned refurbishments as outlined by the Stockpile Life Extension Program. Additionally, this category includes: research, development and certification activities in direct support of each weapon system; and long-term future-oriented research and development to solve either current or projected stockpile problems. These activities are conducted at the national laboratories, the Nevada Test Site (NTS), and production plants.

Campaigns are focused scientific and technical efforts to develop and maintain critical capabilities needed to enable continued certification of the stockpile for the long-term. Campaigns are technically challenging, multi-function efforts that have definitive milestones, specific work plans, and specific end dates. The approach was initiated several years ago in the planning and executing the stewardship program. There are currently 17 planned campaigns. These activities are conducted at the laboratories, NTS, production plants, and other major research facilities such as the OMEGA laser at the University of Rochester and the NIKE laser at the Naval Research Laboratory.

Readiness in Technical Base and Facilities (RTBF) provides the physical infrastructure and operational readiness required to conduct the Directed Stockpile Work and Campaign activities at the national laboratories, NTS and the plants. This includes ensuring that facilities are operational, safe, secure, compliant, and that a defined level of readiness is sustained at DP-funded facilities. For the production plants, all site overhead is also included in RTBF.

The new structure proposal also includes separate decision units for Secure Transportation Asset (formerly Transportation Safeguards Division), Program Direction, and Construction.

Another business practice introduced this year by Defense Programs was the establishment of a rigorous planning process that clearly lays out within each business line, firm programmatic milestones to be achieved within each element of Stockpile Stewardship. The complete program is now defined by a series of program plans that have a five-year planning horizon, each with an accompanying annual implementation plan. Five-year program plans describe the goals and objectives of program elements, and annual implementation plans provide detailed sets of milestones that allow for accurate program tracking and improved oversight.

The rigorous planning that has been done is key to better management, improved focus and sustaining the laboratories as premier scientific and engineering institutions, as well as supporting balanced manufacturing activities necessary to maintain and modernize the stockpile.

Within this business model structure, we have laid out an improved plan, weapon by weapon, part by part, that addresses the tasks required to maintain the stockpile over the next one, five, ten years and beyond. We have support for our program from the Department of Defense (DOD), and the Administration has committed to funding it.

In addition, we have established an Office of Project Management Support to serve as the focal point for all critical construction decisions and performance reviews. It will conduct project readiness reviews and provide technical experts to assist line managers in project planning and execution. It will also serve as a single point of contact for construction policy and procedures, working with program offices and field elements to improve and standardize construction management within Defense Programs.

A key element of the Stockpile Stewardship's continued success is an effective corporate level strategic planning process. We expect to transmit the fiscal year 2001 Stockpile Stewardship Plan (SSP), also called "The Green Book" to the Congress shortly. In the development of the SSP, we rely heavily on the DOD, the National Security Council staff, the Office of Science and Technology Policy, the Office of Management and Budget, and other senior policy officials in the "nuclear community" to help ensure that we continue on the right track.

ACCOMPLISHMENTS

In October 1999, Secretary Richardson ordered a review of the health and status of the nuclear weapons complex and of the status of recruitment, retention and training of top scientists and engineers needed to sustain Stockpile Stewardship. The principal finding of this internal Department of Energy review, led by Under Secretary Ernest Moniz, is that Stockpile Stewardship is on track; both in terms of specific science, surveillance, and production accomplishments and in terms of developing a program management structure that improves the certification process.

Several of the findings of this review will help to shape future decisions in the program. We must continue to prioritize investments, schedules and resources. There are 15 specific actions that emerged from the report's findings. Key among them is the need for DOE and DOD to refine the process for determining the scheduling of stockpile refurbishments over the next several decades to take into consideration military, human, and budgetary needs. We are working with DOD to address this issue right now.

Let me give you just a few examples of how Stockpile Stewardship is already working today:

—In early February our Accelerated Strategic Computing Initiative announced the successful completion of the first-ever three-dimensional simulation of a nuclear weapon "primary" detonation using the IBM Blue Pacific supercomputer at DOE's Lawrence Livermore National Laboratory. On the supercomputer, this calculation ran for more than 20 days. A desktop computer would have taken 30 years to accomplish the task. Modern nuclear weapons consist of two main components: the "primary," or trigger, and the "secondary" which produces most of the energy of a nuclear weapon. The ability to "see and understand" the action of the primary is a critically important step in simulating the entire weapon detonation in three dimensions.

—Subcritical experiments are being conducted at the Nevada Test Site to understand aspects of weapons physics and the aging properties of plutonium to help: assess the stockpile, qualify the pit production facility at Los Alamos National Laboratory; and subsequently, certify our pit manufacturing. The subcritical experimental program also helps to ensure nuclear test readiness as directed by the President with the current underground test moratorium.

Three subcritical experiments were conducted in fiscal year 1999. We successfully conducted the first fiscal year 2000 subcritical experiment on November 9, 1999. It was one of the *Oboe* series of experiments that are conducted in vessels in the same underground alcove. These experiments are somewhat simpler than the typical "full-size" subcritical experiment. Since that time, we have conducted two more experiments in the *Oboe* series to study technical issues.

We plan to conduct four additional *Oboe* experiments this fiscal year, as well as one full-sized subcritical experiment, *Thoroughbred*, to measure early time dynamic behavior of special nuclear material. In fiscal year 2001, we tentatively plan to conduct one full-size subcritical experiment and several smaller experiments similar to the *Oboe* series.

—In November 1999, the first successful hydrodynamic test at the Dual Axis Radiographic Hydrodynamic Test facility provided a freeze-frame photo of materials imploding at speeds of more than 10,000 miles an hour; allowing scientists to study solids and metals as they flow like liquids, thus, becoming hydrodynamic when driven by the detonation of high explosives.

—On January 27, 2000, tests that are key to certification of the W76 Acorn gas transfer system were conducted in the Annular Core Research Reactor at Sandia National Laboratories—five days ahead of our earliest goal. The reactor and all diagnostics and data gathering equipment operated as desired. Initial evaluation of the required data that was obtained from the tests indicate good results for Acorn certification to the stockpile.

—On August 12, 1999, the first lot of 24 War Reserve, W76 neutron generators were placed in inventory by Sandia National Laboratories (SNL), thus demonstrating the capability lost when our Pinellas plant was closed in 1994. Neutron generators are limited life components that help to initiate a fission reaction. SNL is more than doubling neutron generator production capacity to reflect a request by the DOD to produce enough neutron generators to support both the active and inactive stockpiles. Accelerated Strategic Computing Initiative simulations have enabled the certification of the W76 neutron generator as the first radiation hardened component certified without underground testing.

—The Kansas City plant has successfully begun production of tritium reservoirs and is meeting new production requirements for the W76, W80 and W88 warheads parts inventories.

—The Y–12 Plant has resumed uranium processing operations in four of five major mission areas and in portions of the fifth. We are currently working on plans for the difficult resumption of enriched uranium recycle and recovery operations.

—We have signed a 35-year, $1.5 billion agreement with the Tennessee Valley Authority (TVA) for irradiation of tritium producing burnable absorber rods beginning in the Fall of 2003 at TVA's Watts Bar and Sequoyah reactors.

A contract for the assembly of the first 6,000 Tritium Producing Burnable Absorber Rods and follow-up fabrication work is expected to be awarded in the

next few months. Site preparation and detailed design of a Tritium Extraction Facility are underway at the Savannah River Site. To date, we have made up three months of the fiscal year 1999, 12 month congressionally-mandated moratorium on construction of the facility. The facility is scheduled to begin delivering tritium gas to the stockpile in February 2006.

—In fiscal year 1998, Los Alamos National Laboratory fabricated development pits for the W88, demonstrating a capability that DOE has not had since the closure of the Rocky Flats Plant in 1989. We expect to produce the first pit qualified for stockpile use in 2001. By fiscal year 2007, a limited capability to manufacture replacement pits for the units destructively evaluated during surveillance activities will be available.

—DOE has dismantled almost 12,000 weapons since 1990. Disassembly of the W69 was finished at Pantex in fiscal year 1999. DOE plans to finish disassembling the current backlog of retired weapons by the end of fiscal year 2005.

—The Secure Transportation Asset (STA) has met all direct stockpile maintenance shipment schedules, which currently average 1,000 weapon and 4,000 Limited Life Component shipments per year. A further demand on STA is the need to ship an annual average of 3,000 containers of fissionable materials from DOE sites scheduled for closure to other DOE and customer sites for disposal or remanufacture into fuel elements for nuclear reactors. Overall, STA has transported sensitive cargo more than one hundred million miles since 1975 without compromise of its security or release of radiation.

We have continued upgrades of the STA fleet with new safeguard transporters, secure communication upgrades, and new tractor replacements. Additional security enhancements have been directed in response to security guidance and recent analyses which will accelerate these upgrades and require more intensive agent training and recruitment of additional federal agents. We have included increased funding for this in fiscal year 2001.

The Stockpile Stewardship Program has already been able to solve some problems that in the past would most likely have required a nuclear test to resolve. We expect our ability to solve problems without testing to be greater as new tools and expertise come on-line. Keep in mind that it has been nearly 11 years since we have manufactured a new nuclear weapon and over seven years since the last underground nuclear test, yet our confidence in the safety, security and reliability of the current stockpile remains strong. Nuclear deterrence for our nation demands no less!

THE PEOPLE

At the heart of Stockpile Stewardship is the people who make it work. The Chiles Commission on Maintaining U.S. Nuclear Weapons Expertise offered 12 specific recommendations for action under four broad categories: national commitment, program management, personnel policies, and oversight. A key driver in the time frames within which we have been planning and executing the program has been the fact that scientists and engineers with nuclear test experience are nearing retirement age and will be leaving the program in large numbers over the next decade. To transfer the knowledge they have to a new generation is vital so that the role of testing in the process of maintaining our stockpile is well understood in all its dimensions. To make that crucial transition properly we must retain experienced test workers while we recruit and train new workers.

In addition, we are attempting to make that transition in a booming economy where technical expertise is highly recruited and rewarded by the private sector. The skill mix at the laboratories will shift away from nuclear test-based expertise toward a more science-based expertise for maintaining the nuclear weapons stockpile. At the production plants, there will be more emphasis on computer and network-based design tools and advanced manufacturing techniques. These changes in skill mix are major recruiting and retention challenges facing us right now.

There are fewer opportunities to conduct exploratory research at the laboratories due to limits on Laboratory Directed Research and Development (LDRD), which has been a key source of new talent and training at the laboratories. A pay freeze implemented in the early 1990s has resulted in loss of market position for the salaries of scientists and engineers, especially in highly competitive areas such as information science and technology. Increased security requirements may also affect recruitment and retention. Such factors make it more difficult to recruit and retain top scientific talent for Stockpile Stewardship.

Defense Programs is addressing many of these and others issues through actions to implement the Chiles Commission recommendations. Among them is the request for supplemental fiscal year 2000 funding to avoid further layoffs at the plants and to maintain critical skills which you have favorably considered. The fiscal year 2001

request also provides stability in plant funding with some flexibility to address skill mix concerns. For the nuclear weapons labs, the fiscal year 2001 request maintains our commitment to balance the pace and scope of security requirements implementation with preservation of the research environment. To that end, a restoration of LDRD funding to six percent for fiscal year 2001 has been requested. The fiscal year 2001 budget also provides for stability in employment and increases in support for the varied work of science-based stewardship at the labs.

HOW STOCKPILE STEWARDSHIP WORKS

Let me briefly summarize the Stockpile Stewardship process and the challenges it now faces before I go into a more detailed discussion of program elements. Each year, eleven samples of each type of weapon are returned from the active force and are disassembled, examined, tested, and analyzed for defects. If defects are found, their effect on reliability and safety is assessed. Some parts, like neutron generators and gas reservoirs, require replacement at regular intervals, as limited life components. Other parts of a nuclear weapon are made from radioactive materials which decay; and as they decay, both their own properties and the properties of other materials within the weapon may change.

Remanufacturing replacement parts for our nuclear weapons sounds simple enough, but since the time that many of the current weapons in the stockpile were originally manufactured, some of our production plants have been closed and manufacturing processes, techniques and standards have changed. We must adhere to more stringent health and safety standards, and are more concerned about the proper handling and storage of nuclear waste materials. Today, replacement parts require even tighter production controls than the extraordinarily rigid standards under which the original parts were designed and manufactured. A nuclear weapon, less than the size of a small desk, has enough explosive power to completely destroy a modern city, and yet it must be able to survive extraordinary accidents with less than a one-in-a-million chance of exploding. Industrial materials advancements and new manufacturing processes make it difficult, if not impossible, to get exact replacement parts. Yet, we in the nuclear weapons program, must produce replacement parts using modern material and processes that will still maintain the safety and reliability of our weapons while certifying their safety, security and reliability without underground nuclear testing.

As our stockpile weapons continue to age, we expect more parts to require replacement. Because new warheads have not been produced since 1988, we are not replacing old weapons with new ones. In about ten years, most of our weapons designers with nuclear testing experience will have retired. This means that when our newest system, the W88, reaches the end of its original design life in 2014, we may no longer have anyone with the test-based job experience to help us evaluate modifications that may be required due to aging at that time. Successfully dealing with this time factor is critical to the success of the Stockpile Stewardship Program.

Instead of an underground nuclear test, we can conceptually divide the explosion sequence into each of its parts, then test and analyze each of these separately. We plan to put all the data together into a computer calculation—a simulation—to see if the resulting performance is within its original specification. Each part of the simulation must predict the results of each of the separate tests, and where they exist, the results must be consistent with archived underground nuclear test data and research. These simulations will be validated with state of the art experimental tools such as the Dual Axis Radiographic Hydrodynamic Test facility and the National Ignition Facility. We also hope these modern codes and experimental tools will serve to attract and maintain a cadre of outstanding technical staff, the grand challenge of stockpile stewardship.

STOCKPILE LIFE EXTENSION AND SURVEILLANCE

We are working closely with the DOD to finalize detailed plans to indefinitely extend the lifetime of each weapon system in the stockpile. The Stockpile Life Extension Program (SLEP) is DOE's planning framework for a proactive management of system maintenance activities. Under SLEP, options are developed to address potential refurbishment actions. These life extension options address: "musts"—to correct known problems; "shoulds" to prevent foreseeable problems; and "coulds" to improve safety, use control and other items given the opportunity while working "musts" and "shoulds." These life extension options allow the DOE and DOD to anticipate and plan for future resource requirements such as workforce, skills mix, equipment, and facilities. These requirements provide the framework for: our surveillance of the stockpile and stockpile research and development activities at our laboratories, guiding our production plants in validation of new materials, and development and cer-

tification of new manufacturing processes. The cycle is continuous and is closely integrated. Data and information from our surveillance programs and from the hundreds of experiments and simulations being performed, help to identify which parts of a weapon are aging gracefully, and which parts present current and potential future problems.

Stockpile surveillance has been a major element of the U.S. nuclear weapons program ever since the first weapons were put into service. Approximately 1,100 stockpile weapons are thoroughly examined each year. The results provide data not only for assessing the current safety and reliability of the stockpile, but also for developing predictive models and age-focused diagnostics required to anticipate weapons refurbishment requirements.

The Enhanced Surveillance Program (ESP) is developing the technologies and methods, as well as a fundamental understanding of materials properties and weapons science, to significantly improve detection and predictive capabilities. For example, the ESP identified an aging mechanism in a stockpile high explosive, ultimately concluding that the changes actually improved the stability of the explosive. This assessment is permitting us to reuse the high explosive during the W87 life extension program, thus avoiding significant costs. We have also embarked on a novel strategy to accelerate the aging process in plutonium. The capability to predict the lifetime of components made from plutonium will permit us to more accurately identify when pit replacements are needed and when the significant facility investments must be made in order to support pit replacement.

Technical work on the W76/Mk4 Dual Revalidation Project drew to a close in December 1999. There were significant accomplishments in each of its major areas of investigation.

System Level Assessment.—The Military Characteristics and Stockpile to Target Sequence were reviewed and updated and the system was shown to meet requirements. The system also was assessed against safety requirements and for abnormal environments and successfully met them. Results from various tests are being used to validate new computational models, leading to an improved understanding that will be used for future assessments, evaluations and other analyses.

Primary Physics Assessments.—Five hydrodynamic tests were completed, four by Los Alamos National Laboratory and one by Lawrence Livermore National Laboratory. Two of the tests used stockpile-aged high explosives. A modern one point safety assessment was completed that reaffirmed the safety margin calculated in previous assessments. A modern intrinsic radiation analysis was performed. Significant progress was made in baselining.

Secondary Physics Assessment.—There is an improved understanding of the secondary. Significant progress was made in baselining and benchmarking of the secondary.

Physics Package Engineering Assessment.—A test of the ability of the secondary to withstand the revised long-term shipboard vibration environment was completed and the results show it meets requirements. Extensive testing of the high explosive thermal sensitivity, chemical composition, and density properties was completed. An aged physics package was disassembled, inspected, and the aged components tested. A detailed description and catalogue of the function, composition, requirements, state, and design intent of each component was assembled.

Arming Fuzing and Firing (AF&F) and Weapon Electrical System Assessment.—Nineteen AF&Fs were disassembled, inspected, and put through product acceptance testing. An age aware model of the fire set was completed and electronic sub-component models were developed. Most AF&F hostile environment testing is complete.

In addition to these specific accomplishments, the Dual Revalidation Project provided an opportunity to train many people within the DOE and DOD nuclear weapons communities. Engineers and scientists responsible for the system have developed in-depth experience. The project also provided significant contributions to the W76/Mk4 6.2/6.2A life extension study. The review team reports are scheduled to be submitted by the end of March 2000.

DOE has redirected the Dual Revalidation effort into baselining and peer review. The decision was made to baseline all the systems over the next five years while designers with underground test experience are still on the payroll. After the systems are baselined, we will assess any gaps discovered in our knowledge and develop a plan to fill them in.

MANUFACTURING CAPABILITIES

Manufacturing continues to play a critical role in the Stockpile Stewardship Program. During fiscal year 1999, almost 1,300 Limited Life Components (LLCs) were produced. Plans call for the production of over 2,000 LLCs in fiscal year 2000. These

product deliveries signal the successful transfer of production activities from plants which have been closed. The weapons complex is also performing major refurbishment actions on several weapon types, including the B61 and the W87.

The W87 is a key component of the U.S. land based ballistic missile element of the U.S. nuclear deterrent triad. In December 1998, the Y–12 plant at Oak Ridge completed and shipped to Pantex the first refurbished canned sub-assembly for the life extension program of the W87 under our Stockpile Life Extension Program. Early in 1999, the first deliveries of electronic and mechanical parts for the W87 life extension were shipped to Pantex from the Kansas City plant. The first W87 life extension unit was delivered to the Air Force in May 1999. The W87 was the first production unit completed under the life extension program. This is considered a major milestone in meeting a DOE commitment made to the Air Force.

ADAPT

The Advanced Manufacturing, Design, and Production Technologies Campaign (ADAPT) is providing the nuclear weapons complex with advanced capabilities for: designing, developing, and certifying components and systems; and for producing, assembling, and delivering weapons components and products for systems. ADAPT is radically changing how DOE supports the nuclear weapons stockpile by infusing new product and process technologies, and by adopting state-of-the-art business and engineering practices. Our production complex must take advantage of modern design and manufacturing techniques to keep the complex vitally strong and capable under modern technology. We have now begun to use a "paperless" product realization system to quickly design and evaluate components prior to their release for production. Once released for production, the same paperless designs (computer models) are used to develop and drive manufacturing operations. This approach is already cutting costs and time while improving our ability to deliver extremely high quality parts. We have begun to use computer-based multimedia systems to guide production technicians on the shop floor and we expect to see quality improvements similar to those now being gained in U.S. industries using these methods, where manufacturing defects have been cut 60–90 percent. As an additional example, we are using models of the various operations in our production complex to identify and alleviate scheduling and operational bottlenecks. In one instance, we were able to remove a bottleneck in certain dismantlement operations, allowing us to cut in half, the time required to complete dismantlement of a warhead being removed from the stockpile with no compromise in safety and security.

We remain committed to exploring a robust and world-class microsystems engineering capability at Sandia National Laboratories. This effort could allow us to both develop and exploit emerging technologies that show great promise for miniaturizing weapon components, improving their reliability; and for maintaining a critical capability in radiation-hardened electronics needed to address potential safety, security, and hostile radiation threat environments of the future.

TRITIUM

Every U.S. nuclear weapon requires tritium to function as designed. Because tritium, a radioactive isotope of hydrogen, decays at a rate of 5.5 percent per year, it must be periodically replenished. DOE has not produced tritium since 1988 and the current START I inventory will be sufficient only until about 2005, after which the five year tritium reserve will be reduced and a new source of tritium will be needed.

In May 1999, the Department issued a Record of Decision that formalized the Secretary's December 1998 announcement that Tennessee Valley Authority (TVA) reactors would be used to produce tritium. That decision was codified in the National Defense Authorization Act for fiscal year 2000.

Three TVA reactors Watts Bar and both Sequoyah units will be available to irradiate DOE designed, commercially manufactured, tritium-producing rods. DOE plans to start production of tritium in TVA reactors beginning with the scheduled refueling of the Watts Bar reactor in October 2003. After irradiation, the rods will be shipped to the Savannah River Site where a new Tritium Extraction Facility is under construction. The facility will extract tritium gas from the rods and send it to the existing Tritium Loading Facility. Extraction operations are scheduled to begin in February 2006, later than originally planned because of the congressional restriction against tritium construction activities in fiscal year 1999. Again, we have made up three months of this 12 month construction moratorium. The Tritium Extraction Facility's operating capacity will be such that the five year reserve will be fully replenished in two to three years.

An interagency agreement between DOE and TVA went into effect on January 1, 2000. TVA, with DOE assistance, is preparing requests to the Nuclear Regulatory

Commission (NRC) to amend the licenses of the TVA reactors to permit tritium production. TVA plans to submit those requests at the beginning of calendar year 2001. The NRC review of the license amendment cannot begin until TVA has submitted its application for amendment of the operating licenses for Watts Bar and the two Sequoyah units. TVA will be putting that license amendment package together during the rest of calendar year 2000, with assistance from its two fuel vendors (Westinghouse and Framatone) and DOE. TVA corporate and plant licensing and engineering personnel will also be performing analyses and preparing significant portions of the license amendment submission. This work is on schedule.

Also during fiscal year 2000, DOE will award a contract for commercial fabrication of 6,000 tritium-producing rods. Thirty-two rods underwent an irradiation demonstration in the Watts Bar reactor over the course of a full reactor operating cycle that was completed in March 1999. The rods have been taken to a DOE laboratory and are currently undergoing a series of examinations. So far, the results of all examinations have been as expected. Site preparation and detailed design of the Tritium Extraction Facility are in progress this year. In fiscal year 2001, we will begin construction of the facility building.

The Record of Decision on tritium production stated that the Accelerator Production of Tritium (APT) alternative would be developed as a backup tritium technology by completing engineering development and preliminary design. With the success of the commercial light water reactor program and with competing financial demands on other parts of Stockpile Stewardship, DOE has been forced to redefine the work associated with the APT, the backup tritium technology. Consequently, we plan to work with Congress this year to suspend preliminary design work for an APT plant. However, engineering development and demonstration activities at LANL will continue to assure that, should the backup technology be needed, it will be ready. In addition, DOE will explore the potential for a multi-mission accelerator program that could include tritium production, isotope production, and waste transmutation.

EXPERIMENTAL PROGRAMS

It is at the DOE's Los Alamos, Sandia, and Lawrence Livermore National Laboratories and at the Nevada Test Site, that the science base of the Stockpile Stewardship Program is developed and applied. The experimental program is how, in the absence of nuclear testing, we divide the physics of the explosive sequence into each of its parts and analyze each separately. Information that we have from the production and surveillance activities described previously, helps us to focus our experiments. Information from over 1,000 U.S. nuclear tests also tells us where we need to fill in gaps in our knowledge through experiment and observation.

Thousands of experiments, large and small, are performed each year in support of stockpile stewardship. Subcritical experiments help us fill in gaps in empirical data on the high pressure behavior of plutonium, realistically bench marking data on the dynamic, non-nuclear behavior of components in today's stockpile; analyzing the effects of remanufacturing techniques; understanding the effects of aging materials; and addressing other technical issues. Information from these experiments will be key to qualifying the pit production capability at Los Alamos National Laboratory, as well as certifying the performance of weapons which will contain the replacement pits. These experiments also contribute significantly to the maintenance of the critical infrastructure and qualifications of skilled personnel at the Nevada Test Site to maintain readiness.

With the right tools, we can do a thorough job of investigating the first part of the nuclear explosion; that is, the implosion of the plutonium pit by high explosive, with non-nuclear experiments. We can measure a number of important features by taking X-ray pictures during critical parts of the experiment, and we can measure the time evolution of the implosion with arrays of contact sensors (called pins). We can then compare these pictures and time histories with calculations and with previous data from the more than 1,000 underground nuclear tests and 14,000 surveillance tests. Ultimately, we require better pictures at multiple times to certify rebuilt pits and 3–D simulations of weapon performance.

During fiscal year 1999, we conducted some 14 non-nuclear hydrotests at the Pulsed High Energy Radiographic Machine Emitting X-rays (PHERMEX) and related facilities at the Los Alamos National Laboratory; and about 15 tests at the Flash X-Ray (FXR) and B851 Site 300 facilities at the Lawrence Livermore National Laboratory. In addition, we conduct up to 1000 less complex experiments per year aimed at preparing for larger tests and subcritical experiments, and for understanding high-explosives behavior and explosive effects on materials. In fiscal year 2000 and fiscal year 2001, we anticipate conducting a similar number of experi-

ments with major radiography shots, primarily at the Dual-Axis Radiographic Hydrodynamic Test (DARHT) Facility.

The DARHT facility at the Los Alamos National Laboratory, a massive, advanced X-ray facility, will examine an imploding pit model from two different directions at greatly improved resolution and will replace PHERMEX as the primary radiography machine at Los Alamos. The first axis of DARHT is now operational. In addition, under the auspices of the National Hydro Program, DARHT will perform some of the Livermore tests formerly done at the FXR machine located at LLNL. The building to house the second axis of DARHT is complete, and the accelerator is under construction, due for completion in fiscal year 2002.

The FXR firing site has been shut down since early fiscal year 1999 for construction of the Contained Firing Facility which will be completed in fiscal year 2001. FXR is currently being used for non- explosive, beam target development tests in support of the second axis of DARHT.

Experiments using the Los Alamos Neutron Science Center (LANSCE) are investigating proton radiography, a new technique in which proton beams from a linear accelerator are used directly in a novel approach to hydrodynamics-radiography that, if successful, could provide required additional information to our radiographic process of certifying pits. This technique is one of the candidate technologies being considered to make detailed, three-dimensional "motion pictures" of the implosion process. Smaller-scale dynamic proton radiography experiments have already been performed at LANSCE to address important certification issues (e.g., cold high-explosives performance), paving the way for validation of advanced explosives simulation models.

In 1998, the Z-pulsed power facility at Sandia achieved record X-ray energy and temperature levels. In 2001, we plan to conduct about 180 shots in Z in the areas of weapons effects, weapons physics, and ignition. A major activity at Z during fiscal year 2001 will be the completion of installation of the beamlet laser from the Lawrence Livermore National Laboratory which will be used as a diagnostic on Z. This diagnostic will enhance investigations in all areas.

The Inertial Confinement Fusion Program, in conjunction with the other stewardship campaigns, is currently developing detailed experimental plans to achieve ignition and to address other stewardship issues during National Ignition Facility (NIF) operations.

Construction is underway for NIF, an essential element in the long-term success of the Stockpile Stewardship Program. NIF, the world's largest laser, will enable our scientists to generate conditions of temperature and pressure approaching those that occur in nuclear weapons. Demonstrations of how aged or changed materials could behave under these unique conditions will provide data essential to validate computer based predictions. Recently, laser glass has been produced which meets all required technical specifications. This is a major program accomplishment. All the enabling technologies required for construction of NIF have been demonstrated with the exception of coatings that will not incur damage at the laser energy levels required for ignition later in this decade. The NIF building is about 85 percent completed. The 10-meter diameter aluminum target chamber is installed in the building. The Optics Assembly Building to be used for final precision cleaning of the optical components which will be installed in the laser's beam path, and the Central Plant and its cooling towers, have been turned over to the laboratory for operation.

Integration, schedule and cost problems associated with the construction of the National Ignition Facility (NIF) were identified to DOE in late August of last year. On September 3, 1999, Secretary of Energy Richardson announced a series of actions to address these problems. In response, Defense Programs, DOE's Oakland Operations Office, the Lawrence Livermore National Laboratory, and NIF project management have been working together to put the project back on track as directed by Secretary Richardson. The NIF project method of execution is being changed to address the increased complexity of this state-of-the-art system, and the cleanliness problems in assembling and installing the laser and target system infrastructure. As a result, assembly and installation of the beampath infrastructure system will now be managed and performed by industrial partners with proven records of constructing similarly complex facilities.

At the Secretary's direction, an independent task force was formed by the Secretary of Energy Advisory Board (SEAB) to review options to complete the project and to recommend the best technical course of action. The overall conclusion in the interim report to the SEAB stated, "The Task Force has not uncovered any technical or managerial obstacles that would, in principle, prevent the completion of the NIF laser system. Nevertheless, serious challenges and hurdles remain. The NIF Task Force believes, however, that with appropriate corrective actions, a strong management team, additional funds, an extension of the schedule and recognition that NIF

is, at its core, a research and development project, the NIF laser system can be completed." The project is currently developing a new NIF baseline which will be certified by the Department and submitted to Congress as required. We will be working with the Lawrence Livermore National Laboratory management and internally within Defense Programs to get the project back on track. Your continued support of the NIF project, as a key element of the Stockpile Stewardship Program, is essential. The Secretary has committed to work closely with Congress on this issue.

SIMULATION AND COMPUTATION

Data from U.S. nuclear tests, experiments, surveillance, and production activities, provide input to the Stockpile Stewardship Program supercomputers. Sandia, Los Alamos and Lawrence Livermore National Laboratories are collaborating on the supercomputing program. While advanced computing has always been a feature of the nuclear weapons program, the computing speed, power and level of detail required to certify existing nuclear weapons without nuclear testing has required an extraordinary collaborative effort that is breaking barriers undreamed of only five years ago.

The Accelerated Strategic Computing Initiative (ASCI) is developing the high-performance computational modeling and numerical simulation capabilities necessary to integrate theory, existing data, and new experimental data to predict results that can be verified and validated. The ASCI program, a collaborative effort between the U.S. government and U.S. industry, is developing the world's fastest, most powerful computational and advanced simulation and modeling capabilities. These advanced supercomputers are needed to fully implement science-based methods and to assess and certify the safety, security, and reliability of the stockpile without underground nuclear testing.

Advanced computational capabilities that include application codes, computing platforms, and various tools and techniques, are being developed under ASCI and incorporated into ongoing stockpile computational activities. This technology is being developed at about twice the rate of commercial computing speed and power advances. ASCI has been highly successful in meeting its milestones and providing effective new tools to support Stockpile Stewardship. Information developed from other elements of the Stockpile Stewardship Program, such as NIF and our subcritical experiments, will provide the basic physics models and data for ASCI simulations.

At the end of fiscal year 1998, ASCI unveiled its second generation of computing systems. Two major systems capable of running in excess of three trillion operations per second (3 TeraOps) peak speed were delivered ahead of schedule and within budget. Blue Pacific, developed by IBM, is located at the Lawrence Livermore National Laboratory (LLNL), and Blue Mountain, developed by SGI, is located at the Los Alamos National Laboratory (LANL). These systems are each 15,000 times faster and have roughly 80,000 times the memory of the average personal desktop computer. Under the Blue Pacific program, a world record 1.2 TeraOPS was achieved on a hydrodynamics benchmark while a second benchmark run set a world record with 70.8 billion zones.

On February 12, 1998, the Department announced the selection of IBM to partner with ASCI on the Option White 10 TeraOps supercomputer to be located at LLNL. Building upon the experience and knowledge gained with the 3 TeraOps Blue Mountain system, LANL is procuring a computational system that will achieve a peak performance level of 30 TeraOps by mid-year 2001. And the Department's first generation Option Red Intel computer system, installed at the Sandia National Laboratories in 1996, has been upgraded with faster processors and more memory and is now operating in production mode at a peak speed of more than 3 TeraOps.

The ASCI Defense Applications and Modeling Campaign has recently completed the first three-dimensional simulation of a nuclear weapon primary explosion and has compared the results with the data from an underground test. This calculation, an important first step toward simulating a complete nuclear weapon, was performed by the Lawrence Livermore National Laboratory during December 1999.

Completion of the prototype ASCI burn code required to perform the above calculation was the first of an ambitious serious of mileposts required to achieve a high-fidelity simulation of a full nuclear weapon system by 2004. The code team at LLNL met this very difficult milepost on schedule and with code capabilities that exceeded the established programmatic specifications. Future mileposts require a continued effort to extend this calculation to nuclear weapons secondaries and later to full weapons systems. At the same time, other mileposts address the advanced physics and materials models that will be required to achieve the highly accurate simulations that are needed in the absence of underground nuclear tests.

Weapons designers are already utilizing these new three-dimensional codes and the ASCI computer systems to support assessment of the stockpile. They have run simulations to support the certifications of the B61 modification and the W76 neutron generator. These simulations would not have been possible without the capability provided by the ASCI platforms performing at the TeraOps level. However, three-dimensional, high-fidelity simulation of a full weapon system and its performance, as defined by scientists and engineers at DOE national laboratories, will require a minimum of 100 TeraOps of computing capability.

The unprecedented computational power of ASCI is also being made available to selected groups in the university community through the Academic Strategic Alliances Program. In 1997, the Department awarded contracts to five major U.S. universities—Stanford University, California Institute of Technology, the University of Chicago, the University of Utah, and the University of Illinois. The work of the university teams is of similar difficulty and complexity to that needed for Stockpile Stewardship and will provide benchmarks by which we can assess the accuracy of our own work. These projects are expected to lead to major advances in computer simulation technologies as well as to discoveries in basic and applied science, areas important to ASCI, the broader Stockpile Stewardship Program, and other application areas. Applications being developed and run by the university teams are unclassified and deal with significant non-defense scientific priorities.

TECHNOLOGY PARTNERSHIPS PROGRAMS

The Defense Programs Technology Partnerships Program, which has been restructured and directly integrated into Stockpile Stewardship activities, represents an important investment in near-term and future capabilities. The private sector has technical leadership in many areas that are critical to the nuclear weapons program. The Technology Partnership Program sponsored collaborations between the national laboratories, plants and industry are contributing to all components of the Stockpile Stewardship Program. Developing these collaborations has been challenging but there are a number of successes. For example, a partnership between Sandia National Laboratories (SNL) and General Electric has improved SNL's capability in the production of neutron generators, a critical weapons component. Another example is the Los Alamos National Laboratory collaborations with Dow Chemical and PPG on predictive modeling of materials aging. The ability to accurately predict material lifetimes and reliability has paramount consequences for the Nuclear Weapons Stockpile Stewardship Program and for major industrial challenges like aging effects on an array of materials from car frames and engine parts to medical implants. Measured progress in these partnerships remains beneficial to Stockpile Stewardship and to other national concerns.

BUDGET SUMMARY FOR FISCAL YEAR 2001—WEAPONS ACTIVITIES ACCOUNT SUMMARY

[In thousands of dollars]

	Fiscal year				Comparable change—percent
	1999 Current appropriation	2000 Current appropriation	2000 Comparable appropriation	2001 Request	
Operations & Maintenance	$3,899,601	$3,904,464	$3,798,654	$4,179,827	10.0
Fiscal year 2000 Supplemental	.....	55,000	55,000	.....	−100.0
PY Work conducted in fiscal year 1999	28,558	.....	.....	.....	.....
Subtotal, O&M	3,928,159	3,959,464	3,853,654	4,179,827	8.5
Construction	518,984	530,256	530,256	414,173	−21.9
Subtotal, Weapons Activities	4,447,143	4,489,720	4,383,910	4,594,000	4.8
Use of PY Balances	−50,994	−7,668	−7,668	.....	−100.0
Less Proposed Supplemental	.....	−55,000	−55,000	.....	−100.0
Total Weapons Activities	4,396,149	4,427,052	4,321,242	4,594, 000	6.3

The fiscal year 2001 Operations and Maintenance (O&M) request increases 8.5 percent above the comparable fiscal year 2000 appropriated level, including the pending supplemental request. The supplemental request is a result of recommendations in the 30 Day Review which highlighted fiscal year 2000 budget pressures caused by increased security requirements and issues that have emerged since the fiscal year 2000 Congressional budget was submitted. The $55 million would provide

additional funding to address critical skills retention and other issues at the Y–12, Kansas City and Pantex plants, and would continue activities necessary to restart enriched uranium operations at Y–12.

The construction request is about 22 percent below the fiscal year 2000 request level, reflecting programmed decreases in appropriations for major projects, including the National Ignition Facility (NIF) and the Dual Axis Radiographic Hydrodynamic Testing Facility (DARHT), and completion of funding for six projects. The request level supports a continuing program of infrastructure renewal at the laboratories, as well as the start of construction for three key new experimental and manufacturing facilities.

DECISION UNIT SUMMARY

[In millions of dollars]

	Fiscal year				Comparable change—percent
	1999 Current appropriation	2000 Current appropriation	2000 Comparable appropriation	2001 Congressional request	
Stockpile Stewardship	$2,113.1	$2,200.6			
Stockpile Management	2,055.4	[1] 1,991.8			
PY Work conducted in fiscal year 1999	28.6				
Stockpile Stewardship O&M:					
Directed Stockpile Work			$760.0	$836.6	10.1
Campaigns			928.6	1,049.9	13.1
Readiness in Tech Base			1,870.0	1,953.6	4.5
Subtotal			3,558.6	3,840.1	7.9
Secure Transportation Asset		91.5	91.5	115.7	26.5
Program Direction	250.0	205.8	203.6	224.1	10.1
Construction			530.3	414.2	−21.9
Subtotal	4,447.1	4,489.7	4,383.9	4,594.0	4.8
Use of Prior Yr Balances	−51.0	−7.7	−7.7		−100.0
Less Proposed Supplemental		−55.0	−55.0		−100.0
Total, Weapons Activities	4,396.1	4,427.0	4,321.2	4,594.0	6.3
Federal Staffing	1,777	1,751	1,751	1,787	2.1
DP-Funded M&O [2]	22,739	21,582	22,625	22,570	−0.2

[1] Includes $55 million proposed supplemental funding.
[2] Fiscal year 1999 End of Year; fiscal year 2000 and fiscal year 2001 projections are averages for labs and headcounts for plants.

The fiscal year 2001 budget request supports the transition to performance-based program management and budgeting for the Stockpile Stewardship Program. The overall increase in fiscal year 2001 will cover: inflationary increases; support current infrastructure; and does not anticipate involuntary layoffs at the laboratories, Nevada Test Site, or production plants at this time. We have protected our highest priority work associated with pit aging issues, surety improvements, and stockpile support activities.

Stewardship O&M provides funding for activities carried out by integrated contractors encompassing Directed Stockpile Work, Campaigns, and Readiness in Technical Base and Facilities; principally at the Lawrence Livermore, Los Alamos and Sandia National Laboratories, production facilities at Kansas City, Pantex, Savannah River and Y–12, and the Nevada Test Site. The program activities link directly with DP's performance goals and objectives in the Strategic Plan. They provide the technical basis for confidence in the safety, reliability, and performance of the U.S. weapons stockpile in the absence of underground nuclear testing. The programs have been balanced to develop and maintain essential scientific and technical capabilities over the long-term while meeting near-term workload requirements and schedules, within a modern integrated complex with unique and interdependent facilities. On a comparable basis, the fiscal year 2001 request for Stewardship O&M activities is approximately 7.9 percent above the fiscal year 2000 request, including the pending fiscal year 2000 supplemental.

Directed Stockpile Workload increases 10.1 percent in fiscal year 2001. Production schedules for gas generators, neutron generators and tritium reservoirs in the Master Nuclear Schedule, Volume II, are met. Alteration and modification schedules as specified in the Production and Planning Directive, principally focused on the W87

Life Extension Program, schedules are supported. Although we will be working with the DOD to relax certain outyear schedules, critical near-term stockpile needs are supported. Limited full scale engineering development continues in support of the W80 and W76, although we are interested in exploring less complex, lower cost workload options with the DOD. We are studying the potential transfer of the work on the W80 from the Los Alamos National Laboratory to the Lawrence Livermore National Laboratory as a longer-term workload leveling measure. Pit manufacturing and certification efforts for the W88 continue.

The Campaigns increase $121.3 million, or 13.1 percent above the fiscal year 2000 comparable level of $928.6 million, to support the development of the tools and scientific capabilities required to maintain and certify the nuclear stockpile without underground nuclear testing into the future. The budget request allocates significant program growth over fiscal year 2000 to the highest priorities: supporting campaign activities and key milestones in Pit Manufacturing Readiness (+54 percent growth); Primary Certification (+41 percent growth); Enhanced Surveillance (+21 percent growth); and ICF and High Yield (+21 percent growth). Program growth in the 10 to 20 percent range is allocated in the Secondary Certification, Advanced Radiography, and Certification in Hostile Environments campaigns.

Pit Manufacturing Readiness, which increases $38.1 million, or 54 percent above the fiscal year 2000 comparable level, will focus on continuing the manufacture of development pits leading towards the manufacture of a certifiable W88 pit. Increased funding will support the hiring of production staffing and the procurement and installation of reliability equipment. Subsequent to fiscal year 2001, activities will move from manufacturing development pits to steady state manufacture of pits for qualification and production pits for placement into the stockpile.

Primary Certification, which increases $11.9 million, or 41 percent above the fiscal year 2000 comparable level, performs increasingly complex integrated hydrodynamic radiography and subcritical experiments for development of simulation codes and weapon certification.

Enhanced Surveillance, which increases $15.6 million, or 21 percent above the fiscal year 2000 comparable level, will include a pit study to determine whether pit lifetimes equal or exceed 60 years (enabling substantial deferral or downsizing of a potential new pit manufacturing facility) and the development and implementation of new, non-destructive examination tools for early detection of potential flaws.

Inertial Confinement Fusion Ignition and High Yield, which increases $21.1 million, or 21 percent above the fiscal year 2000 comparable level, will support the design and development of the NIF Cryogenic System, the development of the initial set of core target diagnostics and laser characterization diagnostics for NIF, ignition target design, development and experiments to verify conditions necessary for ignition, weapons physics experiments which also support other Stewardship campaigns.

Secondary Certification and Nuclear Systems Margins, which increases $8.6 million, or 19 percent above the fiscal year 2000 comparable level, will support design of above ground experiments to examine HE-induced case dynamics and performance issues required for code validation and to enhance capabilities in hydrodynamic modeling.

Advanced Radiography, which increases $5.1 million, or 14 percent above the fiscal year 2000 comparable level, optimizes the first axis beam on DARHT which became operational in fiscal year 1999. Research and development will be conducted to begin to define the requirements for advanced radiography capabilities to support certification of refurbished and replaced primaries.

Certification in Hostile Environments, which increases $1.6 million, or 12 percent above the fiscal year 2000 comparable level, will allow us to start the development of System Generated Electromagnetic Pulse model validation for the ASCI codes to support the W76 Arming Firing and Fusing (AF&F) certification, to work on 0.5 m rad/hard (silicon-on-insulator) technologies for the W76 and future AF&F refurbishments , and to accelerate the calculations of weapons outputs.

We are maintaining progress on achieving an assured source of tritium, although we are suspending the efforts on the preliminary design for the backup Accelerator Production of Tritium plant. We are developing advanced stewardship tools, particularly simulation and modeling, the Dual Axis Radiographic Hydrodynamic Test (DARHT) facility, 3D burn codes, and subcritical experiments. These activities are essential to maintain confidence in the safety of the stockpile without underground nuclear testing to assure that the U.S. will continue to certify the effectiveness of the nuclear weapon stockpile into the future.

Within the Readiness in Technical Base and Facilities decision unit, the largest category supporting operations of facilities is essentially flat from the fiscal year

2000 level. There is significant growth over fiscal year 2000 in other categories such as Containers, Program Readiness, and Advanced Simulation and Computing.

Advanced Simulation and Computing increase $80 million, about 20 percent, including: $3.9 million to accommodate final development and delivery of 10 TeraOps system and ongoing operating expenses for the 3 TeraOps (LANL and SNL) systems; $8.7 million for Distance and Distributed Computing (DisCom 2) efforts to scale up software development and network bandwidth substantially in order to enable tri-lab use of the 10 TeraOps platform under demanding conditions; $45.1 million for Visual Interactive Environment for Weapons Simulation (VIEWS) for integrating visualization and data management and developing technologies that contribute to the "see and understand" capabilities for 3D simulation codes data with increased levels of fidelity and for new computing and display equipment and software development to use scalable parallel technologies and, $13.0 million for Collaborations with University Partners, Alliances, Institutes and Fellowships for existing commitments and expansion of the program along with continued development of partnerships with expertise in academia.

The Department's Secure Transportation Asset is requesting a funding increase of 26.5 percent over fiscal year 2000 to support its plan to continue to redress security and other vulnerabilities identified in recent Departmental evaluations, including the replacement of safe secure transporters (SST's) with the next generation SafeGuards transporters, equipment and escort vehicle upgrades, recruitment of new courier classes, and enhanced inservice training.

Defense Programs is requesting an increase in Program Direction funding of $20.5 million, a 10.1 percent percent increase over the fiscal year 2000 appropriation. The largest portion of this increase, $11.0 million, is to cover the DP federal staff's salaries and benefits. This increase covers expected cost of living increases, step increases, promotions, and full year funding for the 30 new hires to be brought onboard during fiscal year 2000 at headquarters as part of the Secretary's Workforce 21 initiative to fill critical mission skill positions. The request supports the Secretarial Scientific Retention and Recruiting initiative to enhance scientific and technical talent in the federal workforce, and provides flexibility to relocate staff and consolidate functions among headquarters, operations office and area offices in fiscal year 2001.

Construction includes all DP-funded, line item infrastructure and programmatic construction projects at the laboratories, Nevada Test Site, and plants. The construction request is about 22 percent below the fiscal year 2000 level. This reduction reflects the completion of appropriations for six projects, and planned decreases for three more, including the National Ignition Facility (NIF) and DARHT experimental facilities that are progressing towards completion. Three new starts are also proposed: the Distributed Information Systems Lab at the Sandia National Laboratory in California; Highly Enriched Uranium Storage Facility at Y–12; and Weapon Evaluation Testing Laboratory at Pantex; and in addition, Defense Programs is piloting the Departmental initiative to request "Preliminary Project Design and Engineering" funding for potential out year new construction starts. This pilot project is intended to remedy problems in construction projects related to inadequate scope definition and premature cost estimates. Construction funds included in the fiscal year 2000 request for NIF do not reflect forthcoming cost and schedule changes.

CONCLUSION

Stockpile Stewardship is a one-of-a-kind endeavor. It is unique in that we are responsible for a product that everyone hopes we will never have to use. It is unique in the same way that the Manhattan Project and Apollo moon program were: innovative, creative approaches to something new under the sun with no margin for error. It is unique in that we are not making any new weapons, but are only maintaining existing inventory. We must continue both to maintain current models without total system testing, but also be prepared to return to design, production and testing if directed to do so by the President. Every year, our success on the job must be certified to the President. Our responsibilities and capabilities are often the focus of heated public debate and occupy a singular position in the formulation of foreign and defense policy.

On the other hand, Stockpile Stewardship involves many industrial processes common to private industry. We must be sure that product replacement parts continue to be available and that new materials and processes are compatible with maintaining our existing inventory in perfect working order without underground nuclear testing. To get the job done right, we rely on advanced scientific expertise, complex experimental capabilities, historic product data, and highly sophisticated computer calculations—bottom line—more high tech than almost any other organi-

zation. We have high level security and safety concerns, transportation needs, environmental responsibilities, downsizing requirements, workforce and training issues, cost-benefit trade-offs to consider, and other problems similar to those faced by private businesses, although in a unique context. And, as is usually the case in any business or government activity, our people remain the key to our success now and in the future.

Properly supported and carefully managed, I believe the Stockpile Stewardship program will continue to maintain, indefinitely, a safe and reliable stockpile without the need to conduct nuclear testing. I know of no other national security issue more important for our nation in this new millennium of great challenges.

ADVANCED MANUFACTURING TECHNOLOGY

Senator DOMENICI. Thank you very much. Now you have provided examples of the type of improvements needed in the weapons program. Can I clarify those three items you sent up here for us to look at?

General GIOCONDA. The strong link, switches——

Senator DOMENICI. Yes, now the very heavy one is the current one?

General GIOCONDA. Yes. It is the one currently in a lot of our stockpile, or versions of it.

Senator DOMENICI. Then the second one is a little machine inside of that plastic box. Is that little machine going to take the place of the big one?

General GIOCONDA. Yes, sir, it can. It also will be closer to the actual prevention of detonation by moving it closer to the actual thing you are worried about.

Senator DOMENICI. Then the third one was another change in evolution into a little tiny strip that will do the same thing as the box with 500 pieces?

General GIOCONDA. Yes, sir.

Senator DOMENICI. I note there are some young people in the audience this morning. You are not from my State, but could you maybe tell us where you are from? Who is the leader of the crowd?

VOICE. We are from Alabama, Minnesota, South Dakota, and Nebraska.

Senator DOMENICI. Well, we welcome you to this hearing. We are going to pass these three exhibits to you, and you can look at them.

Without going into too much detail, the heavy one is the one we are currently using to make sure our nuclear weapons cannot be armed in the case of accidents or the like. The next one right behind it is a modern, technologically improved item that takes the place of that one, and then if you look at the third one you will see a little tiny strip of tape. It is a microchip. It takes the place of the other two, and this will just show you the kind of changes that are occurring in science and technology.

This committee is going to consider and ultimately pass a bill that provides for the nuclear weaponry for the United States, and also for the Energy Department in terms of nonnuclear energy research and the like. So this is a small but important Subcommittee on Appropriations, and we welcome you to our hearing, and we hope you have a great time from the States you're from, and that you have a safe trip home.

Do any of you young people have a quick question for the witnesses?

[No response.]

Senator DOMENICI. Okay. You can be thinking about that and we will let you ask that later. If you stick around awhile maybe you can write one up between you.

The next witness today is Ms. Rose Gottemoeller, Acting Deputy for Defense Nuclear Nonproliferation. Would you proceed with no more than 10 minutes?

STATEMENT OF ROSE GOTTEMOELLER

Ms. GOTTEMOELLER. Mr. Chairman, Thank you very much for the opportunity to appear before this subcommittee. As always, I welcome the opportunity to tell you and your colleagues about our program.

As you know, my office has undergone a number of organizational changes over the course of the last year. Specifically, in the National Nuclear Security Administration, my office, the Office of Nonproliferation and National Security, has been redesignated as the Office of Defense Nuclear Nonproliferation. In addition, the Department's Office of Fissile Materials Disposition was incorporated into this new office. Implementation of these new arrangements has gone very well, and we are now better able to respond to proliferation challenges, in my view.

FISCAL YEAR 2001 BUDGET REQUEST

In the office's fiscal year 2001 budget request is $906 million. This figure incorporates both the former Office of Nonproliferation and National Security, for which we are requesting $683 million, and on a comparable basis an increase of $136 million, or 21 percent above the fiscal year 2000 appropriation and the Office of Fissile Material disposition for which we are requesting $223 million on a comparable basis, an increase of $22 million, or a 10-percent increase above the fiscal year 2000 appropriation.

Mr. Chairman, I appear to need my glasses at this age for numbers. I apologize. In any event, I will proceed.

LONG-TERM RUSSIAN INITIATIVE

A major priority for the Department of Energy in the coming fiscal year is a proposed $100-million long-term, nonproliferation program with Russia developed by Secretary Richardson as a key part of the President's fiscal year 2001 budget request for the expanded threat reduction initiative. The proposed $100-million initiative should be reviewed in the context of our broader effort in Russia to end the production of fissile materials and reduce existing stockpiles, an effort that includes the plutonium disposition program, the HEU purchase agreement, and the plutonium production reactor agreement.

Allow me to give you a few details concerning the new initiative, which is divided into two parts. The first involves the nuclear fuel cycle, for which we are requesting $70 million, and the second covers the Russian nuclear infrastructure, for which we are requesting $30 million.

Let me turn first to our work on the nuclear fuel cycle under the new initiative. Since 1992, the United States has invested substantial resources to cooperate with Russia to secure and eliminate

weapons-grade nuclear materials in Russia's military nuclear program.

We aim to expand these efforts by strengthening the security and accounting for existing civil plutonium stockpiles, preventing the further accumulation of separated plutonium from spent fuel produced by civil nuclear power reactors, and raising technical barriers to the possible misuse of civil nuclear technologies to further weapons programs.

MORATORIUM ON SEPARATED CIVIL PLUTONIUM

A key aspect of the nuclear fuel cycle work is a proposed moratorium on the further accumulation of separated civil plutonium from spent fuel. Each year, Russia produces approximately 2 metric tons of separated civil plutonium at its Mayak reprocessing plant, adding by 2 metric tons per year to their growing stockpile of more than 30 metric tons of this material and, sir, I feel it is particularly important, given our emphasis in our plutonium disposition program on disposing of approximately 2 metric tons a year, that we do get a handle on this additional production of 2 metric tons per year.

To support this moratorium, we are proposing to assist Russia in designing, licensing, and constructing a dry storage facility for civil reactor spent fuel that would otherwise have been reprocessed. Our funds will support the development of technically sound, environmentally safe and secure approaches to spent fuel packaging and storage.

A second program area involves collaborative research to enhance the proliferation resistance of nuclear reactors and fuel cycles. The stages of collaboration include refining nonproliferation performance metrics, evaluating specific technologies against these metrics, and ultimately developing the most promising options that incorporate safety, environmental, and economic considerations in addition to nonproliferation. Major research and development investments in this area are conditioned on Russia fulfilling its commitments to curtail nuclear cooperation with Iran.

RUSSIAN NUCLEAR INFRASTRUCTURE

Now, let me turn to the second part of the initiative, our work on the Russian nuclear infrastructure. A requested $30 million is to support new initiatives to address nonproliferation dangers associated with Russia's nuclear infrastructure. We will expand efforts to consolidate nuclear weapons usable material in fewer sites and fewer buildings, and to improve material protection and control in highly sensitive Russian Navy nuclear sites.

New funds will also further advance national security goals by helping to accelerate the closure of nuclear warhead assembly and disassembly lines at the Avangard and Penza-19 plants in Russia, two out of the four Russian warhead production plants.

New funds will also support the expansion of our work in cooperation with the Ministry of Atomic Energy Situation and Crisis Center to permit networking of Russian nuclear complex facilities to that center for emergency management and response.

Now, Mr. Chairman, I would like to turn briefly to two other program areas, our material protection control and accounting pro-

gram, which is progressing well, and our brain drain programs. We have improved the security of 450 metric tons of fissile material at more than 30 sites in Russia under our material protection control and accounting program.

GENERAL ACCOUNTING OFFICE REPORT

A recent GAO report of which you may be aware criticizes the Department for having completed security upgrades for only 7 percent of the material considered at risk. The GAO's assertion is not accurate. In fact, we have completed rapid security upgrades for 450 metric tons of highly enriched uranium and plutonium, or approximately 70 percent of the estimated stock of at-risk materials.

These upgrades include quick fixes, such as fortifying entrance and exit points, placing 1-ton concrete blocks on material storage areas, or even just bricking up windows to secure these sites against terrorist and outsider attacks.

The 7-percent figure cited by the GAO refers only to those sites where we have completed all upgrades.

A key part of our strategy in the coming year is to embark upon a strategic planning process, which was one recommendation in the GAO report, with an eye toward increasing efficiencies, reducing costs, and promoting sustainable operations.

We are completing at the present time a model project further to consolidate and convert more than 200 kilograms of highly enriched uranium and plan to convert an additional 600 kilograms of this material. Over the next 2 years, our goal is to convert 8 to 10 additional metric tons of highly enriched uranium and that, as I see it, is an important new direction for the program to consolidate materials and ensure that over time the number of facilities and buildings we have to address are actually fewer in number through the consolidation process.

NUCLEAR CITIES INITIATIVE

I would now like to turn very briefly to our flagship brain drain prevention programs, the Nuclear Cities Initiative [NCI], for which we are requesting $17.5 million, and the Initiatives for a Proliferation Prevent [IPP] program, for which we are requesting $22.5 million.

I would like to make a couple of remarks about the Nuclear Cities Initiative, which has had considerable successes in the last couple of weeks. In fact, we have had underway high-level strategic planning efforts with the Ministry of Atomic Energy in both Sarov and Snezhinsk. The Sarov strategic plan was completed last September, and we have among other things identified the reduction of 6,000 employees at the Institute for Experimental Physics in Sarov.

In addition, we are accelerating the shut-down of weapons assembly and disassembly at the Avangard plant, and recently signed an agreement to produce medical equipment at the Avangard plant through a German-American medical equipment company. This particular project was mentioned, you may have seen, on CNN last Friday night, when we were actually able to announce that program just last Friday.

Also last week we completed a strategic planning process for the City of Snezhinsk, and there we will have a second open computing center as well as a number of major industrial projects, and so I feel for our two out of three cities we are proceeding to a closing stage in completing the strategic planning process, which was an effort that was really underscored as necessary by our counterparts and colleagues here on Capitol Hill.

A third team is in Moscow at the present time to move forward on strategic planning for the City of Zheleznogorsk, so Mr. Chairman, I will just conclude by underscoring that we have taken the recommendations of this body to heart and are truly moving out on trying to define carefully successful projects under this particular effort.

PREPARED STATEMENT

I would like to submit the rest of my remarks for the record, if I may, and thank you for your attention.

[The statement follows:]

PREPARED STATEMENT OF ROSE GOTTEMOELLER

INTRODUCTION

Mr. Chairman and members of this Subcommittee, thank you for the opportunity to appear before you today to present this statement for the record on the Department of Energy's fiscal year 2001 budget request for the Office of the Deputy Administrator for Defense Nuclear Nonproliferation, formerly the Office of Nonproliferation and National Security. I look forward to working with you, Chairman Domenici, and with the rest of the members of the Subcommittee on Energy and Water Development, as we address some of the many serious challenges facing our nation today.

It has been more than a decade since the Berlin Wall fell, opening a new era in history. While the Soviet threat is gone, dangers arising from the global spread of nuclear, chemical and biological weapons, and missiles for their delivery, remain with us. These dangers are real and increasingly unpredictable. As President Clinton recently declared, the proliferation of weapons of mass destruction "continues to pose an unusual and extraordinary threat to the national security, foreign policy, and economy of the United States." As a nation, we may face no greater challenge than to prevent these weapons from falling into the hands of those who would use them against us or our allies.

As you know, my Office has undergone a number of organizational changes over the course of the last year. Specifically, Title 32 of the National Defense Authorization Act for fiscal year 2000 calls for the creation of a new National Nuclear Security Administration (NNSA). In the NNSA, my Office, the Office of Nonproliferation and National Security, has been re-designated as the Office of Defense Nuclear Nonproliferation. In addition, the Department's Office of Fissile Materials Disposition was incorporated into this new Office. Implementation of these new arrangements have gone very well. We are now better able to respond to proliferation challenges. In a separate reorganization effort, the Office of Security Affairs and the Office of Emergency Management, formerly in the Office of Nonproliferation and National Security, were transferred to the new Office of Security and Emergency Operations led by General Eugene Habiger (USAF Ret.). This move was part of the Secretary's initiative to centralize the Department's domestic nuclear security functions. And finally, to address the management demands and significant budget share of our Material Protection, Control and Accounting Program (MPC&A), I created a new division in 1999 and added to it important remaining functions in international emergency management. The new division is called the Office of International Materials Protection and Emergency Cooperation. I am confident that the combined effect of these changes will sharpen our ability to address the proliferation problem.

FISCAL YEAR 2001 BUDGET REQUEST

The Office's fiscal year 2001 budget request is $906 million. This figure incorporates both the former Office of Nonproliferation and National Security, for which

we are requesting $683 million, on a comparable basis, an increase of $136 million or 21 percent above the fiscal year 2000 appropriation, and the Office of Fissile Materials Disposition, for which we are requesting $223 million, on a comparable basis, an increase of $22 million or a 10 percent increase above the fiscal year 2000 appropriation. In general terms, this increase reflects our commitment to meet the ever growing challenges our nation faces in the international arena, as well as new opportunities to consolidate and expand our nonproliferation work in cooperation with Russia.

LONG TERM NONPROLIFERATION PROGRAM WITH RUSSIA

A major priority for the Department of Energy in the coming fiscal year is a proposed $100 million long term nonproliferation program with Russia, developed by Secretary Richardson as a key part of the President's fiscal year 2001 budget request for the Expanded Threat Reduction Initiative (ETRI). This new program will improve our ability to respond to the most serious challenges presented by Russian nuclear facilities and nuclear weapon-usable materials. Activities included in this program will supplement existing efforts to reduce proliferation dangers in the Russian military nuclear complex, while addressing a new area, that is, separated plutonium produced in Russia's civil nuclear sector.

The proposed $100 million initiative should be viewed in the context of our broader effort in Russia to end the production of fissile materials and reduce existing stockpiles, an effort that includes the Plutonium Disposition program, the HEU Purchase Agreement, and the Plutonium Production Reactor Agreement. These activities, in addition to the hundreds of millions of dollars we are spending to assist the Russian Government's activities to improve fissile material security in Russia, reflect our deep concerns over the risks of theft and diversion of nuclear materials in the unique circumstances of the post-Cold War environment.

Allow me to provide you with a few details concerning this new initiative. There are essentially two parts. The first involves the nuclear fuel cycle, for which we are requesting $70 million; the second covers the Russian nuclear infrastructure, for which we are requesting $30 million.

Nonproliferation and the Nuclear Fuel Cycle ($70 million).—Since 1992, the United States has invested substantial resources to cooperate with Russia to secure and eliminate weapon-grade nuclear materials in Russia's military nuclear program. We aim to expand these efforts by strengthening security and accounting for existing civil plutonium stockpiles, preventing the further accumulation of separated plutonium from spent fuel produced by civil nuclear power reactors, and raising technical barriers to the possible misuse of civil nuclear technologies to further weapons programs.

A key aspect of the nuclear fuel work is a proposed moratorium on the further accumulation of separated civil plutonium from spent fuel. Each year, Russia produces approximately two metric tons of separated civil plutonium at its Mayak reprocessing plant, adding to two metric tons per year to their growing stockpile of more than 30 metric tons of this material. To support this moratorium, it will be necessary to assist Russia in designing, licensing, and constructing a dry storage facility for civil reactor spent fuel that would otherwise have been reprocessed. Funds will support the development of technically sound, environmentally safe, and secure approaches to spent fuel packaging and storage. Funds will also support accelerated completion of material control and accounting work on tens of tons of civil plutonium currently stored at the Mayak site.

A second program area involves collaborative research to enhance the proliferation resistance of nuclear reactors and fuel cycles. The stages of collaboration include refining nonproliferation performance metrics, evaluating specific technologies against those metrics, and ultimately developing the most promising options that incorporate safety, environmental and economic considerations, in addition to nonproliferation. Major research and development investments in this area are conditioned on Russia fulfilling its commitment to curtail nuclear cooperation with Iran. Restrictions will also continue on Russian nuclear entities that engage in nuclear assistance to Iran.

We will also propose research collaboration on long term solutions to the problem of managing spent fuel and nuclear waste. This will include further developing the science underlying geologic repositories and researching environmental, safety and related issues involved in spent fuel storage.

It bears noting that this bilateral initiative is not intended to address civil fuel cycle programs outside of Russia. Specifically, the United States will maintain its commitments regarding the use of plutonium in civil nuclear programs in Western Europe and Japan.

Russian Nuclear Infrastructure ($30 million).—$30 million is requested to support new initiatives to address nonproliferation dangers associated with Russia's nuclear infrastructure. We will expand efforts to consolidate nuclear weapon-usable materials in fewer sites and fewer buildings and to improve material protection and control in highly sensitive Russian Navy nuclear sites. New funds will also further advance national security goals by helping to accelerate the closure of the nuclear warhead assembly and disassembly lines at the Avangard and Penza-19 plants. Our plan includes financing for non-military projects to support displaced warhead production workers. New funds will also support the expansion of our work in cooperation with the Ministry for Atomic Energy's Situation and Crisis Center to permit the networking of Russian nuclear complex facilities to that Center for emergency management and response purposes. And finally, funding will facilitate negotiations on an internationally funded program to cooperate with Russia on repatriating highly enriched uranium from Soviet-supplied research reactors in Eastern Europe and elsewhere.

MATERIALS PROTECTION, CONTROL AND ACCOUNTING

The new $100 million Russia initiative builds on existing programs and successes. Our Materials Protection, Control and Accounting (MPC&A) program is a good example of this success. Through the MPC&A program, we have built a legacy of trust, solid working relationships and cooperation with Russian agencies, institutes and scientists, facilitating our efforts to improve the security for the nuclear materials at highest risk throughout the Russian nuclear complex. This program is an essential bulwark against the nuclear weapons aspirations of terrorists or countries of proliferation concern.

Our MPC&A efforts are progressing well. We have improved the security of hundreds of tons of fissile material at more than 30 sites in Russia. Last October, Secretary Richardson and Russian Minister for Atomic Energy Adamov signed a government-to-government agreement that will ensure the job gets done at the remaining sites. We are also nearing completion of a separate implementing agreement with the Russian Ministry of Defense that will advance our MPC&A work at a number of very sensitive Russian Navy sites. I have been very impressed with the unprecedented degree of cooperation and access shown by the Russian Navy to Department of Energy employees.

A recent GAO report [1] criticizes the Department for having completed security upgrades for only seven percent of the material considered at risk. The GAO's assertion is not accurate. In fact, we have completed rapid security upgrades for 450 metric tons of highly enriched uranium and plutonium, or approximately seventy percent of the estimated stock of at-risk material. These upgrades include quick fixes—such as fortifying entrance and exit points, placing one ton concrete blocks on material storage areas, or even just bricking up windows—to secure these sites against terrorist or outside attack. The next level of protection includes material tracking and accounting systems to protect against insiders siphoning off these fissile materials. Both layers of protection are needed to secure materials well into the future. The seven percent figure cited by the GAO refers only to those sites where we have completed both short and long term upgrades.

While the emphasis in our first years of operation was on the "quick fix," today we are implementing a strategic plan, with an eye towards increasing efficiencies, reducing costs, and promoting sustainable operations. A key part of this strategy is our effort to consolidate and convert highly enriched uranium into a non-weapons-usable form. We recently completed a model project to consolidate and convert more than 200 kilograms of highly enriched uranium, and plan to convert an additional 600 kilograms of this material. Over the next two years, our goal is to convert 8–10 additional metric tons of highly enriched uranium.

"Sustainability" is another important part of our longer term efforts. We must ensure that computers for nuclear materials accounting and control remain operational and that the protective locks we help to install do not rust and break away. For this task, we will establish training centers, identify credible Russian suppliers of MPC&A equipment, and help in the development of regulations and security force procedures, as well as a central system to track amounts and locations for all of Russia's nuclear material.

Our strategic plans address two additional issues raised in the GAO report that I would like to comment on: access to facilities and taxation by the Russian government. As you might imagine, access is a sensitive point for Russia since we are

[1] "Limited Progress in Improving Nuclear Material Security in Russia and the Newly Independent States," GAO/RCED/NSIAD–00–82 (March 2000).

working at some of their most highly secret sites. But we are making progress. Secretary Richardson, for example, recently established a special task force to help us better understand Russia's requirements for approving visits by DOE personnel and to share ideas on ways to better facilitate access. I should also stress that this is not a complex-wide problem. In fact, I would argue that we have more access to sites than we have money to perform upgrades. Moreover, at major defense sites, such as Mayak, Krasnoyarsk-45, and Sverdlovsk-44, we have gained considerable access and are moving quickly to upgrade material security. Sites that fail to grant access do not receive contracts for work.

Russian taxation of our MPC&A cooperation is another area where we are making good progress. New Russian legislation and implementing regulations are now on the books which exempt the entire MPC&A program (and all other DOE cooperative programs with Russia) from direct Russian taxes. I am pleased to report that the MPC&A program was one of the first to be registered as tax exempt. This is a very positive step forward. The GAO report correctly indicates that approximately $1 million in taxes were included in a contract for MPC&A work by a particular Russian institute. In fact, we have not paid the $1 million in taxes, and we are working on ways to avoid ever paying. In the meantime, I have directed the MPC&A program to review all existing contracts to ensure that DOE takes full advantage of its tax-exempt status. I have also issued updated guidance to DOE labs on this topic.

For the coming fiscal year, our base request for the MPC&A program is $149.9 million, or approximately $5 million above the comparable amount appropriated in fiscal year 2000. This increase reflects the transfer of international emergency cooperation from the Office of Security and Emergency Operations to our MPC&A program. In the international emergency cooperation program, we conduct nuclear threat assessments; obtain samples of seized nuclear materials for forensic analysis; and develop training and emergency response plans for foreign governments and international organizations. In addition, $2 million from the proposed $100 million Russia nonproliferation initiative will support the continuation of our work with the Russian Situation and Crisis Center, which is now linked by a direct televideo line to our own Emergency Operations Center. We are also requesting an additional $20 million for MPC&A work under the proposed $100 million Russia nonproliferation initiative. Together, this would constitute a 15 percent increase over the fiscal year 2000 appropriation. The increase will allow us, among other things, to improve security at highly sensitive Russian Navy sites and to continue consolidating and converting Russia's stocks of weapon-usable nuclear material.

ARMS CONTROL AND NONPROLIFERATION

Our arms control and nonproliferation budget for fiscal year 2001 is $123 million, representing an increase of $6.7 million, or approximately 5 percent above the comparable funds appropriated in fiscal year 2000. Activities covered by this budget line include a number of critical nonproliferation programs in Russia and the Newly Independent States, but also technical, analytical, and operational support for the major pillars of the larger nonproliferation regime, that is, treaties and agreements, export controls, international nuclear safeguards, and work in regions of proliferation concern. Our activities in these areas highlight the breadth and depth of the Department's contribution to U.S. arms control and nonproliferation priorities.

Knowing your interest in the Russia problem, let me turn to our flagship "brain drain" prevention programs—the Nuclear Cities Initiative (NCI), for which we are requesting $17.5 million; and the Initiatives for Proliferation Prevention (IPP) program, for which we are requesting $22.5 million. This represents a $10 million increase for these programs together above the fiscal year 2000 appropriation. The $10 million increase would be applied to NCI, building on the momentum the program has gathered over the past year.

As you know, Secretary Richardson and Minister Adamov established the Nuclear Cities Initiative in late 1998 to cooperate with Russian efforts to create peaceful, commercial jobs for displaced Russian nuclear weapons scientists and engineers in the ten "closed" cities. Our initial focus has been on three municipalities—that is, Sarov (Arzamas-16), Snezhinsk (Chelyabinsk-70), and Zheleznogorsk (Krasnoyarsk-26). NCI is a new type of "brain drain" prevention program in that it is focused on nuclear workers who are slated to leave the nuclear weapons complex as facilities, and their jobs, are eliminated.

This program is on track. Since April 1999, when my Office was first authorized to spend funds, we have commissioned an Open Computing Center in Sarov, an International Business Development Center in Zheleznogorsk (with similar centers to open soon in Snezhinsk and Sarov), and signed an agreement in December 1999 with the European Bank for Reconstruction and Development to open small busi-

ness loan centers in the three cities, providing access to millions of dollars in potential financing. The first loan was recently approved for a small, 5-person company in Zheleznogorsk.

We have also initiated high-level strategic planning efforts with the Ministry for Atomic Energy to establish goals, costs, and time-lines for workforce reduction and facility closures in each of the three cities. The Sarov strategic plan was completed last September, identifying, among other things, the reduction of as many as 6,000 employees of the Institute for Experimental Physics, a nuclear weapons design institute. Through the plan, we have also agreed to the accelerated shutdown of weapons assembly and disassembly at the Avangard plant: weapons assembly will halt by the end of 2000; weapons disassembly will halt by the end of 2004. A commercial agreement for the production of kidney dialysis equipment was also recently completed, linking Avangard (home of a Russian nuclear weapons assembly in Sarov), a German-American medical equipment company, and the Lawrence Livermore National Laboratory. Similar private industry partnerships are under development in other closed cities.

I am proud to say that NCI is already working to create jobs. The Open Computing Center will have 100 new contract research employees this year, with another 500 jobs expected by 2001. A separate center in Sarov for nonproliferation analysis has opened and will employ 30 or so workers displaced by down-sizing in the Russian nuclear weapons complex. The kidney dialysis equipment project at Avangard could create more than 100 jobs and has the potential to bring major investments into Sarov. In all, more than 30 civil projects, equating to more than 700 jobs, are either funded or under development across a range of commercial areas—from laparoscopy in Sarov, to fiber optic production in Snezhinsk, to canola oil and seed processing in Zheleznogorsk. The $10 million increase in fiscal year 2001 will allow us to build this program by creating perhaps as many 1,000 new jobs in the three cities.

Like NCI, the IPP program works to secure weapons of mass destruction expertise and know-how. Since the program's inception in 1994, more than 6,000 weapons scientists in Russia and the Newly Independent States have been supported through 400 non-military projects. The program partners Russian and NIS scientists with specialists at the Department's national laboratories and concentrates aggressively on the commercialization of projects that are cost-shared with U.S. industry. Major corporations—such as United Technologies, DuPont, and American Home Products—are participating in this program. To date, U.S. industry has contributed $64 million, eclipsing the $38 million provided by the Department of Energy for cost-shared projects. Six commercial projects have already been launched, with full graduation from U.S. government financing, and another thirteen are poised for full commercialization by the end of 2001.

Improving the commercial thrust of the IPP program is just one of the recommendations suggested by the GAO in its February 1999 report (GAO/RCED–99–54, "Nuclear Nonproliferation: Concerns With DOE's Efforts to Reduce the Risks Posted by Russia's Unemployed Weapons Scientists.") that we have moved to implement quickly. All of our IPP projects are now reviewed by the U.S. Industry Coalition, helping to promote those having genuine commercial potential. Other issues raised by the GAO report have been addressed as well. For example, we now use the Civilian Research and Development Foundation to avoid the payment of taxes on IPP projects in Russia; we have the agreement of the governments of Ukraine and Kazakhstan not to tax IPP payments; we vet all projects through an interagency screening process to rule out activities that might further a weapons program; and we cap the amount of IPP budgeted funds going to DOE's national laboratories at 35 percent.

Our progress to prevent a "brain drain" of weapons expertise complements our related efforts to prevent illicit nuclear trade and secure nuclear materials outside of Russia. MPC&A is the first line of defense. Our "second line of defense" program is working to help Russia block unauthorized nuclear trade at nine key border crossing points and transportation centers. We plan to place radiation detection equipment at all nine points by the end of this calendar year. These efforts are above and beyond my Office's responsibility to support multilateral export control regimes, to administer U.S. controls over transfers of American nuclear technology to other countries, and to ensure that DOE-funded activities take place in compliance with U.S. export control laws and procedures.

We have additional nuclear material security programs focused on MPC&A improvements in former Soviet states outside of Russia and the protection of plutonium-bearing spent fuel in two special cases—North Korea and Kazakhstan. Our "on the ground" efforts to can and secure more than 8,000 spent fuel rods in North Korea is nearing completion, and we hope to move to the long-term maintenance

phase of this project. We will maintain a presence in the country to preserve equipment, ensure the continued integrity of the fuel canisters, and address any International Atomic Energy Agency safeguards issues that might arise. In Kazakhstan, the news is also good. There, the first phase of operations to can and secure 3,000 plutonium-bearing spent fuel rods in the BN–350 reactor at Aktau is nearly complete. The next phase involves placing the material in long-term storage. Expert discussions on this issue are progressing well, and we expect to launch a long-term management program in fiscal year 2001.

Our efforts to control weapons of mass destruction materials and expertise at their source is a critical part of our nonproliferation mission. But we must also do more to address the concerns that motivate states to pursue these weapons. Drawing on the Department's and its national laboratories' tradition of excellence in arms control and nonproliferation, my Office supports a number of projects and institutions that are dedicated to improving dialogue and communication in regions of tension, including the Middle East, South Asia and Northeast Asia. Among other activities, we will continue to fund the Cooperative Monitoring Center (CMC) at close to $5 million in fiscal year 2001. Located outside the fence of Sandia National Laboratories, the CMC provides training and education for regional officials and specialists in the use of unclassified monitoring technologies that can be applied across a broad range of potential agreements and arrangements—from demilitarized monitoring to monitoring shared watersheds. On his visits abroad, Secretary Richardson has made it a special point of emphasis with India, Israel, Egypt, and others to encourage their participation in CMC and related arms control and nonproliferation training activities.

And finally, allow me to say a word about our other efforts to strengthen bilateral and multilateral arms control and nonproliferation agreements. We hope to complete a START III Agreement with Russia in 2000. My Office is preparing for that agreement, evaluating the impact of a warhead dismantlement verification regime on the U.S. weapons complex and developing, in some cases in cooperation with Russian scientists, technologies to demonstrate that warheads can be verifiably dismantled without disclosing sensitive nuclear weapons design information. We are developing similar "information barrier" techniques for other agreements designed to promote transparent and irreversible reductions of nuclear stockpiles, including the U.S.-Russia-IAEA Trilateral Initiative, the HEU Purchase Agreement, and negotiations, led by the Department of Defense, with Russia to construct a weapons-origin plutonium storage facility at Mayak and an associated agreement to measure that plutonium before it is converted in a packaging and processing facility.

FISSILE MATERIALS DISPOSITION

The transfer of the Office of Fissile Materials Disposition to the new Office of Defense Nuclear Nonproliferation is now complete and has gone extremely well. Laura Holgate, who has served very ably as Director of that Office, is now Associate Deputy Administrator for Fissile Materials Disposition and Special Secretarial Negotiator for Plutonium Disposition. There is a strong synergy between fissile materials disposition and my Office's broader mission to demilitarize large stocks of U.S. and Russian fissile materials surplus to national security requirements.

On the domestic front, the Office of Fissile Materials Disposition made significant progress this past year. We transferred substantial quantities of surplus U.S. highly enriched uranium to the U.S. Enrichment Corporation for down-blending and peaceful use as commercial fuel. We entered into contracts with the private sector for the design of two key plutonium disposition facilities—a plutonium pit disassembly and conversion plant and a mixed-oxide (MOX) fuel fabrication plant. We continued to demonstrate our capability to disassemble various types of nuclear weapons pits at the Los Alamos prototype "ARIES" facility. And in January 2000, the Department issued a Record of Decision, codifying the decision to construct and operate three new plutonium disposition facilities at the Savannah River Site in South Carolina. This decision calls for the immobilization of 17 metric tons of plutonium and the use of up to 33 metric tons of plutonium as mixed oxide fuel for irradiation in existing U.S. commercial nuclear power reactors.

On the international front, as part of the President's Expanded Threat Reduction Initiative, we continued our efforts in partnership with Russia to demonstrate a number of plutonium disposition technologies, demonstrations that will accelerate Russia's ability to build the facilities needed to dispose of its own surplus plutonium. We also continued extensive negotiations with Russia on a bilateral plutonium disposition agreement. Implementation of such an agreement is needed to trigger the start of actual disposition in both countries. I am pleased to report that U.S.

and Russian negotiators are now very close to a final document; both sides are pushing hard to have an agreement in hand this spring.

The fiscal year 2001 budget request for U.S. and Russian disposition activities is $223 million, an increase of $22 million over the comparable amount appropriated in fiscal year 2000. The increase will enable us to begin Title I design of a facility to immobilize surplus non-pit plutonium; incorporate aqueous processing in the design for the MOX fuel fabrication facility; fund MOX lead test assembly activities; facilitate advanced gas reactor and reactor fuel qualification work in Russia; and hire additional Federal staff necessary to oversee these disposition activities.

HIGHLY ENRICHED URANIUM TRANSPARENCY AND IMPLEMENTATION

In addition to plutonium, our work with Russia to convert surplus highly enriched uranium from the Russian military stockpile into a non-weapon-usable form is also progressing well. The 1993 U.S.-Russia HEU Purchase Agreement remains one of the more impressive nonproliferation achievements of the last decade. Through the end of calendar year 1999, more than 80 metric tons of weapons grade uranium—enough for 3,200 weapons—had been removed from the Russian military program under this Agreement and converted to low enriched uranium for commercial sale. Already, Russia has received close to $1.5 billion as compensation for converted HEU. Secretary Richardson and Under Secretary Moniz have been instrumental in keeping this complex agreement on track.

My Office administers the HEU transparency and implementation program to monitor the conversion and processing of this material at Russian facilities subject to the Agreement. Over 70 teams—the equivalent of nearly 43,000 inspection hours—have visited these facilities to monitor conversion operations. During the past year, we installed a Blend Down Monitoring System (BDMS) at one Russian facility to provide continuous monitoring data in support of our transparency objectives. For fiscal year 2001, we are requesting $15.2 million to continue these efforts, principally by upgrading transparency measures at additional Russian blending facilities and exploring new opportunities to strengthen this important activity.

INTERNATIONAL NUCLEAR SAFETY AND COOPERATION

Reducing safety risks at the 64 operating Soviet-designed nuclear power reactors is another priority area for my Office. While our fiscal year 2000 appropriation was half of the requested amount, we nevertheless had a successful year, including a vigorous effort to prepare Russia and Ukraine, the two primary users of Soviet-design reactors, for Y2K. We provided computer hardware and software, equipment and technical guidance to these countries, as well as experts in country for the actual rollover. The best measure of success may have been that the Y2K rollover came and went without incident. Our contributions to nuclear safety can be expressed by other metrics—we installed safety parameter systems at seven nuclear power plants; we completed six simulators to model normal operating and response procedures; we provided U.S. training methods for nuclear plant operators; and we continued to provide in-depth reactor safety assessments to identify risks and prioritize safety upgrades.

We are encouraged not just by our progress to address nuclear safety at operating reactors, but by the early closure of older reactors as well. Ukraine remains on track to shutdown permanently Chornobyl's Unit 3, the sole operating reactor at the Chornobyl plant, by the end of this calendar year. Our efforts to support the construction of a replacement heat plant at Chornobyl for decontamination and decommissioning purposes are also proceeding well. In addition, Kazakhstan has shut down the BN–350 reactor and our attention is now focused on plans for decommissioning and decontamination of the reactor's sodium coolant. Removal of the coolant effectively bars the reactor's restart. And in Lithuania, the government recently called for the closure of Unit 1 at the Ignalina nuclear power plant in 2005, representing another important nuclear safety achievement.

Our fiscal year 2001 budget request is $20 million, representing an increase of $5 million, or 33 percent, above the fiscal year 2000 appropriation. This increase will allow our program to accelerate efforts to address the most pressing nuclear safety risks associated with these reactors and to ensure the safe and orderly shutdown of reactors nearing the end of their service life. In all of these efforts, we work closely with our colleagues in the U.S. Government, including the Department of State, the Agency for International Development, and the Nuclear Regulatory Commission.

RESEARCH AND DEVELOPMENT

I wish to end on what may in some respects be the most pernicious security threat of the 21st century—the danger that Americans will be the targets of nuclear, chemical or biological weapons attacks. Responding to this threat is extremely complex. Not only must we be ready to mitigate the consequences of an actual attack, but we must also discriminate between real threats and the hoaxes that occur almost daily. In 1999, the FBI investigated more than 150 threats involving anthrax. While none of these threats proved to be real, the disruption, in terms of confusion and wasted resources, continues to be a source of concern.

Our research and development efforts are breaking new ground in the campaign to combat proliferation and protect U.S. security. We do this by developing and delivering field-tested, state-of-the-art technologies and systems for proliferation detection to our customers. We are developing new technologies to counter nuclear smuggling, detect nuclear materials diversion, and prepare for new arms control verification challenges in a future START III agreement. We are also advancing new remote systems to detect the early stages of a proliferant's nuclear weapons program.

In the area of nuclear test detection, we are developing new space-based systems to monitor above ground nuclear explosions world-wide and are delivering a "knowledge base" system on regional seismicity to the U.S. Air Force that will improve our national capability to detect nuclear explosions at lower yields than could be detected using traditional, teleseismic systems. We have also delivered a new generation of detectors to identify radioactive particulates from atmospheric nuclear explosions. These systems and capabilities are all needed irrespective of whether a Comprehensive Test Ban Treaty is in force.

We have numerous examples of success in other areas. Our solid state, fiber optic neutron and gamma ray sensor for nuclear materials detection was transferred to industry and selected by R&D magazine as one of the 100 most technologically significant products of the year. For the U.S. Customs Service, we completed upgrades for an advanced nuclear smuggling detection demonstration unit. Just recently, we launched the Multispectral Thermal Imager satellite, providing a state-of-the-art system to help us "see" reflected and thermally radiated electromagnetic waves.

The chemical and biological weapons threat is particularly worrisome. To meet this threat, the Department of Energy is drawing upon the diverse and extensive expertise of its national laboratories. Fortunately, we are making progress. Last year at this time, I reported that we possessed no simple, portable, and reliable tools for the detection of biological agents. Now, we are building half a dozen prototype devices that could soon be available for "first responders," that is, local police, medical and other community officials. Our goal is to provide these first responders with advanced systems that have laboratory sensitivity for use in the field; we recently developed a battery operated, hand-held gas chromatograph, sensitive to parts per billion, that gives us that capability. We are also demonstrating and field-testing integrated chemical and biological protection systems for high-risk infrastructure and events, whether at a subway or the Super Bowl, and developing advanced genetic and computational tools to "fingerprint" biological agents, leveraging DOE's investment in the Human Genome Project.

The Research and Development budget request for fiscal year 2001 is $233 million, representing an increase of $8 million, or 3 percent, above the fiscal year 2000 appropriation. This increase will allow us to continue to improve our abilities to detect and counter weapons of mass destruction programs. Our research and development programs are breaking new scientific and technological ground and strengthening our response to current and projected threats to U.S. national security.

PROGRAM DIRECTION

The success of our programs is a testament to the motivated men and women we employ to further our critical nonproliferation missions. As our programs grow, so must our workforce. We also must have a sufficient number of Federal employees to oversee the many projects and activities we lead. Our program direction budget request for fiscal year 2001 is $41.6 million, an increase of $13.5 million, or 48 percent, above our fiscal year 2000 comparable appropriations. This is a large, but essential jump. We will use this increase to hire 56 new Federal employees to meet our expanding nonproliferation and national security mission and to support augmented DOE operations at the U.S. embassies in Moscow, Russia and Kiev, Ukraine. By "federalizing" our workforce, we can also reduce our reliance on M&O and support service contractors.

CONCLUSION

Mr. Chairman and members of this Subcommittee, as I am sure you can agree, the proliferation dangers we face today are clear and present. We have no room for error. I am confident that the programs we are advancing today will have dramatic payoffs tomorrow. The budget request we provide to you today puts us on the road to safety and security and avoids the path of danger and destruction. It also sends a clear message to the world community that the United States and Secretary Richardson will spare no effort to reduce the global danger of the spread of weapons of mass destruction.

STATEMENT OF ADM. FRANK L. BOWMAN

Senator DOMENICI. Now, Admiral Bowman, would you like to talk to us about your program, please, and what you need?

Admiral BOWMAN. Yes, sir. Mr. Chairman, distinguished committee members, I know the next time I testify in the wake of Tom Gioconda I am going to bring some artifacts with me so not to be upstaged by all of these trinkets Tom brought.

Senator CRAIG. A sub will not fit in this room.

NAVAL REACTOR PROGRAMS

Admiral BOWMAN. Naval Reactors, Mr. Chairman, as you know, was organized in the late 1940's by Admiral Rickover with the visionary concept of cradle-to-grave responsibility for all aspects of maintaining and operating the Navy's nuclear-powered fleet. It is a centrally managed, single-purpose organization with clear lines of authority, responsibility, and accountability for all aspects of its operation. Naval Reactors has enjoyed the benefit of the full support of Congress over these years. As a result, the country has benefited.

The program's basic structure, policies, and practices were preserved in an executive order signed by President Reagan upon Admiral Rickover's retirement in 1982. The fiscal year 2000 National Defense Authorization Act specified this executive order as the charter for naval reactors within the new National Nuclear Security Administration and, similar to the fiscal year 1985 National Defense Authorization Act, mandated that the provisions of the naval nuclear propulsion executive order remain in full force until changed by law. Adherence to the tenets of this executive order have been key to naval reactors' operational excellence and unsurpassed record of safety.

NAVAL REACTORS OPERATIONS

Specifically, Mr. Chairman, our nuclear Navy has now steamed safely over 119 million miles in the ocean, equivalent to nearly 5,000 times around the globe. We are responsible today for 103 operating nuclear reactors, equal to the number of commercial reactors in this country. We have accumulated over these years over twice the operating experience of the United States' commercial power industry and over half the operating experience of the entire commercial power industry worldwide. Our outstanding and fully public environmental record enables our ships to visit over 150 ports worldwide, visits that are absolutely critical to our Nation's forward presence and deterrence strategy and ability to project power.

NAVAL REACTORS ORGANIZATION

Last summer, as the Senate Armed Services Committee was considering the issue of reorganization of the Department of Energy, both former Senator Warren Rudman and retired Admiral Hank Chiles recognized the importance of Naval Reactors' organizational structure to its success and to national security in their testimony. Admiral Chiles specifically testified, "I want to state emphatically that Naval Reactors, the DOE arm of the Naval Reactors program, is carrying out its mission in an exemplary manner. Therefore, I strongly recommend that you retain Naval Reactors' authorities, responsibilities, and structure."

This was, of course, done in the implementation of title 32 of the National Nuclear Security Administration and, Mr. Chairman, I want to thank you personally, as well as the committee and your staff, for your continuing efforts in support of the Naval Reactors program and its basic tenets. The country and our Nation's security will continue to benefit from your actions.

If I may quickly recount some facts about the Naval Reactors' program in our fiscal year 2001 DOE budget request, today's Navy operates 83 nuclear-powered warships and one nuclear-powered research submarine and, as I discussed earlier, we oversee 103 operating reactors. Nine of our 12 country's aircraft carriers are nuclear-powered, giving us the capability to sprint where needed and arrive on-station ready for sustained power projection.

Last year was the first full year of a 15-year DOE laboratory development effort on the new reactor plant for this carrier of the 21st Century, called the CVNX.

All 56 of our country's attack submarines are nuclear-powered. They possess inherent characteristics such as stealth, endurance, mobility, fire power, multimission capability, which afford unfettered access to contested battle space 24 hours a day, 7 days a week, 24/7, as we say today.

Once there, submarines can surveil new or emerging adversaries undetected and provide timely insight on their intentions and capabilities to policymakers without risk of political escalation. This is particularly valuable, since many of the world's bad actors today understand their own vulnerability to satellite reconnaissance and often are able to employ deceptive means to cover it.

Usefulness of these traits has resulted in the near doubling of the intelligence surveillance and reconnaissance tasking requirements over the last 10 years for our attack submarine force. While those same numbers of attack submarines have decreased by nearly 40 percent. Should tensions escalate, submarines can also execute Tomahawk strikes from undisclosed locations without warning, often from inside an adversary's defensive umbrella.

I predict that in the future we are going to demand more and more of these first-in, last-out, versatile platforms. It is worth noting that the Joint Staff, in conjunction with our unified war-fighting CINC's, recently completed an exhaustive study of attack submarine missions and force structure. That study reconfirmed that submarines are far from being cold war relics.

In fact, I was with Senator Lieberman just yesterday in Groton, Connecticut, at the unveiling of a centennial stamp collection in

honor of the U.S. Submarine Force. Senator Lieberman in his remarks called the attack submarine a sunrise system for this country, certainly not a sunset system. They provide unprecedented multimission capability, and will continue to be a significant value as we execute the national security strategy in the challenging decades ahead.

The design of the reactor plant for today's new attack submarine, the Virginia class, will be about 93 percent complete at the end of fiscal year 2001. Today, 90 percent of the components for that lead ship have been already delivered to the ship-builder. Overall, ship construction is 25 percent complete and is on schedule. All 18 of our Ohio-class Trident ballistic missile submarines are nuclear-powered. They remain the most survivable leg of the Nation's strategic deterrence triad.

FISCAL YEAR 2001 BUDGET REQUEST

Our DOE budget request for fiscal year 2001 is $677.6 million, less than 4 percent of the DOE budget request, and less than 1 percent of the prospective total defense budget of the country. I believe our record says this is a pretty good investment.

Our DOE 2001 budget request is about $11 million less, about 2 percent less in real dollars than our fiscal year 2000 request. Naval Reactors is a very lean organization. We continually scrub our operating and infrastructure requirements. For example, we have downsized our DOE laboratories, we have shut down six of our eight land-based research and development prototypes, and we continue to look for ways to save.

PREPARED STATEMENT

The Office of Naval Reactors within the Department of Energy transferred into this new NNSA on March 1, 2000. There have been no interruptions in program operations or support for the Navy, nor will there be. Naval Reactors' operations in our DOE budget request are outlined in more detail in my written statement.

Thank you again for your continuing support.

[The statement follows:]

PREPARED STATEMENT OF ADM. FRANK L. BOWMAN

Thank you for inviting me to testify on Naval Reactors' fiscal year 2001 Department of Energy budget request.

Naval Reactors is a centrally managed, single-purpose organization with clear lines of authority and total responsibility and accountability for all aspects of Naval Nuclear Propulsion. As the Director of Naval Reactors, I have direct access to the Secretary of the Navy and to the Secretary of Energy. Naval Reactors' principal mission is to provide militarily effective nuclear propulsion plants to the U.S. Navy and to ensure their safe, reliable, and long-lived operation.

Under the visionary leadership of Admiral Hyman G. Rickover, Naval Reactors was organized in the late 1940's with the concept of cradle-to-grave responsibility. Upon Admiral Rickover's retirement in 1982, President Reagan signed Executive Order 12344 with the express purpose of ". . . preserving the basic structure, policies, and practices developed for this program in the past. . . ." The fiscal year 2000 National Defense Authorization Act specified the Executive Order as the charter for Naval Reactors and, similar to the fiscal year 1985 National Defense Authorization Act, mandated that ". . . the provisions of the Naval Nuclear Propulsion Executive Order remain in full force and effect until changed by law." The charter, as incor-

porated within Title XXXII, maintains my responsibility for all aspects of the Program, including the following:

—Research, development, design, and construction;
—Operation, operator selection and training, maintenance, and disposal; and
—Administration (e.g., security, nuclear safeguards, transportation, public information, procurement, and fiscal management).

Operating within the tenets of the Executive Order, the Naval Reactors Program has a flat organization with clear, simplified lines of authority and a culture of technical, managerial, and fiscal excellence. The longevity of its senior managers and staff ensures continuity of expertise through the extremely long lives of the nuclear propulsion plants it builds and supports. The Program has compiled an unparalleled record of success, including the following:

—Nuclear-powered warships have safely steamed over 119 million miles—equivalent to nearly 5,000 trips around the Earth.
—Naval Reactors is responsible today for 103 operating nuclear reactors. For perspective, this is equal to the number of licensed commercial power reactors in the United States. In addition, over the years, we have accumulated over twice the operating experience of the U.S. commercial power industry. Naval reactor plants have accumulated over 5,100 reactor-years of operation, compared to about 2,400 for the U.S. commercial industry. In addition, our operating experience is about half that of the entire commercial power industry worldwide (our 5,100 reactor-years compared to about 9,200 worldwide—including the United States).
—Naval Reactors' outstanding (and fully public) environmental record enables our ships to visit over 150 ports around the world—critical to our Nation's forward-presence strategy and ability to project power.

Both former Senator Warren Rudman and Admiral Henry G. Chiles recognized the importance of Naval Reactors' organizational structure to its success and to national security in testimony before the full Senate Armed Services Committee last June.

Senator Rudman stated:

> We called for the integration of the DOE Office of Naval Reactors into the new agency for nuclear stewardship. We recommend this because we believe the ANS [now NNSA] should be the repository for all defense-related activities at DOE. However, we believe the Office of Naval Reactors must retain its current structure and legal authority, under which its director is a dual-hatted official, both a four-star admiral and a part of DOE.

Admiral Chiles also advised the Committee:

> . . . I want to state emphatically that Naval Reactors, the DOE arm of the Naval Reactors Program, is carrying out its mission in an exemplary manner. Therefore, I strongly recommend you retain Naval Reactors' authorities, responsibilities, and structure. A most important point is [that it is] crucial to ensure Naval Reactors remains outside the Department of Defense so the program can continue to successfully carry out its regulatory responsibility. I can personally attest, based upon my long and direct experience, to the success of the Naval Nuclear Propulsion Program. This program is a model of how a defense activity should be carried out within the Government.

Today's Navy operates 83 nuclear-powered warships and 1 nuclear-powered research submarine. Nuclear power enhances a warship's capability and flexibility to sprint where needed, and arrive ready for sustained power projection. The Navy has repeatedly employed the unique capabilities inherent in nuclear propulsion. Sustained high speed (without dependence on a slow logistics train) enables rapid response to changing world circumstances, allowing operational commanders to surge these ships from the U.S. to trouble spots or to shift them from one crisis area to another. Nuclear propulsion helps the Navy to stretch available assets to meet today's worldwide commitments.

—Nine of twelve aircraft carriers are nuclear-powered-growing to eleven of twelve when CVN 76 and CVN 77 enter the Fleet. Nuclear-powered carriers can transit to a crisis area unsupported at sustained high speed and arrive fully ready to launch the awesome firepower of the airwing. Then, they can sustain that presence and response without immediate replenishment of combat consumables, and with tactical mobility and flexibility, free from the need for propulsion fuel replenishment. The future carrier, CVNX, will continue to provide these benefits.

—The 56 U.S. nuclear attack submarines possess inherent characteristics such as stealth, endurance, mobility, firepower, and multimission flexibility. These characteristics afford unfettered access to contested battlespace 24 hours a day, 7 days a week, for as long as required. Once there, submarines can surveil new or emerging adversaries undetected and provide timely insight on their intentions and capabilities to policymakers without risk of political escalation—particularly valuable because many potential adversaries understand their vulnerability to satellite reconnaissance, and often employ deceptive methods to defeat it. The usefulness of these traits has resulted in the near doubling of Intelligence, Surveillance, and Reconnaissance (ISR) tasking requirements over the last 10 years while submarine force levels have been reduced by nearly 40 percent. Should tensions escalate, submarines can also execute Tomahawk strikes from undisclosed locations without warning, often from inside an adversary's defensive umbrella.

Additionally, within its Research and Development (R&D) programs, the Navy is investing the R&D dollars necessary to equip submarines with new and dominant technologies. The Navy is developing offboard sensors (such as unmanned undersea vehicles) to facilitate a clearer picture of the battlespace, and is leveraging the explosion in information systems technology to more readily share this insight with other naval and joint forces in a timely and useful manner. The Navy is working to increase payload capacity and enhance multimission flexibility. These technologies will be integrated into VIRGINIA Class submarines as they are built, and backfitted into earlier submarines, where appropriate. The Navy is also pursuing electric drive technology, which will dramatically improve our acoustic stealth and provide the power density required for revolutionary advances in sensors and weapons.

Finally, it is worth noting that the Joint Staff, in conjunction with our unified warfighting CINC's, recently completed an exhaustive study of attack submarine missions and force structure. The study reconfirmed that submarines are far from being Cold War relics. They provide unprecedented multimission capability and will continue to be of significant value as we execute the national security strategy in the challenging decades of the 21st century.

—The 18 nuclear-powered OHIO Class ballistic missile submarines are the most survivable and cost-effective leg of the Nation's strategic deterrence triad. These reliable, stealthy ships also carry more strategic warheads than the other two legs of the triad combined. These ships use only 34 percent of our strategic budget and are manned by less than 1.5 percent of our naval personnel.

FISCAL YEAR 2001 DOE BUDGET REQUEST

Naval Reactors' principal charge, as well as the bulk of its resources and work, is to ensure safe and reliable operation of reactor plants in U.S. Navy nuclear-powered warships, enhance their performance, and develop improved reactor plants in support of the Navy's needs.

Sustaining today's 103 operating reactors requires continuous analysis, testing, and monitoring of plant and core performance. Nuclear propulsion is a demanding technology—the harsh environment within a reactor plant subjects equipment and materials to the deleterious effects of irradiation, corrosion, high temperature, and pressure over a lifetime measured in decades. In addition, naval reactor plants must be rugged enough to accommodate ships' pitching and rolling; have the resilience to respond to rapidly changing demands for power; be robust enough to withstand the rigors of battle; and be safe for and easily maintainable by the Sailors who must live next to them.

Development efforts at Naval Reactors' DOE laboratories have led to significant advancements. Improved components and materials, longer core lives, and improved predictive capabilities have allowed the Navy to extend the service life and intervals between major maintenance periods for nuclear-powered warships. The reduction in ship off-line time for maintenance effectively increases ship availability and, thus, the Navy's warfighting capability, while also reducing maintenance costs. Added ship availability is particularly important in the face of Fleet downsizing as the operational demands on each remaining ship increase. In the same vein, development efforts are ensuring that we can meet the Navy's need for extended warship lifetime.

However, new development and analysis challenges arise as a result of these advancements. For example, the longer intervals between major maintenance periods reduce opportunities to examine and/or replace aging components. Thus, a more extensive analytical and testing effort is required to verify materials and component

performance. Extended ship lifetime also demands exhaustive testing and performance enhancements to ensure that component endurance—despite potential corrosion and mechanical strain—can be assured for significantly greater than the design life. As data are gathered from deploying ships with long-lived reactor cores, the emphasis on this area has grown. A life-of-the-ship core offers extraordinary advantages in terms of ship availability, cost reduction, and reduction in radiation exposure and waste generation; however, a life-of-the-ship core eliminates mid-life opportunities to examine reactor components. Moreover, the adverse consequences of, and the cost to deal with, a flawed core or component would be much greater. Testing and verification, therefore, will be paramount to ensure that naval reactor plants will continue to perform safely.

New DOE laboratory development work is focused on the next generation submarine reactor for the Navy's new *VIRGINIA* Class attack submarines and on a new reactor plant intended for the Navy's new CVNX Class aircraft carriers.

The design of the reactor plant for the Navy's *VIRGINIA* Class submarine will be about 93 percent complete by the end of fiscal year 2001. Currently, the design of the reactor plant for the *VIRGINIA* Class is about 85 percent complete. Today, 90 percent of the components for the lead ship have been delivered, all on schedule and within budget. The pre-reactor-fill test program has begun and is on schedule to support ship delivery. The forward end of the engine room module (including associated reactor plant systems) has been delivered from Quonset Point to Electric Boat for final outfitting. Overall, ship construction is 25 percent complete and is on schedule. The lead submarine incorporating this plant is expected to go to sea in fiscal year 2004. The *VIRGINIA* Class submarines will provide badly needed capability for the Navy at an affordable price.

In September 1998, the Defense Acquisition Board approved the Navy recommendation for a new design nuclear propulsion and electric plant for CVNX Class aircraft carriers and authorized the beginning of propulsion plant design efforts. CVNX is expected to be authorized in fiscal year 2006 and to go to sea in fiscal year 2014 to replace *USS ENTERPRISE* (CVN 65).

The CVNX reactor plant design will be consistent with the CVNX Mission Needs Statement approved in March 1996, the approved CVNX evolutionary strategy, and the CVNX Operational Requirements Document, which is expected to be approved shortly.

CVNX is the first new carrier designed since the 1960's *NIMITZ* Class design. The new design CVNX reactor plant will build on three generations of nuclear propulsion technology developed for submarines since *NIMITZ* to incorporate needed advancements in warfighting capabilities and to significantly reduce life-cycle costs.

Last year was the first full year of a 15-year DOE laboratory development effort on the new reactor plant for CVNX. Reactor plant design work began in earnest to support the long design and manufacturing lead-times required for reactor plant components and the CVNX ship construction schedule. Current design efforts include general arrangement studies, system description development, and component design, including sizing and system interface evaluations. Naval Reactors approved the first CVNX system description (steam generating system) last month. Current design work is focused on supporting procurement of long lead reactor plant forgings planned for fiscal year 2001 and establishing the necessary system descriptions and general arrangements required for later design activities.

Naval Reactors also is proceeding with the inactivation of six shutdown DOE developmental and training prototype reactor plants. The increased sophistication of computer models and the accumulation of operational data, along with the decrease in the need for Navy plant operators, have allowed the shutdown of six of the eight land-based prototype reactor plants. Since 1993, Naval Reactors has been inactivating and dismantling the shutdown plants as promptly as funding and manpower will allow to eliminate surplus facilities, reduce environmental liabilities, and contribute to positive remediation in three States.

This inactivation and cleanup work is progressing well. Today, this effort is over 80 percent complete. The last of the prototype reactor plants at the Naval Reactors Facility in Idaho was defueled in fiscal year 1999. By the end of fiscal year 2000, inactivation at the Windsor site in Connecticut will be complete and regulatory approval for unrestricted release is expected. Two of four prototype reactors at the Kesselring site in New York have been inactivated and defueled, and dismantlement and cleanup are proceeding.

Program technical requirements

Naval Reactors' technical budget request is categorized into "areas of technology" including Reactor Technology and Analysis; Materials Development and Verification; Plant Technology; and Evaluation and Servicing. This approach conveys the integrated and generic nature of our DOE research and development work. When research, development, and design work is executed in individual technology areas, it frequently can be both retrofitted into existing ships and incorporated into future ships.

—The fiscal year 2001 request of $216.9M for Reactor Technology and Analysis will ensure continuation of work on the next generation reactor for the *VIRGINIA* Class submarine and development work on the new reactor for CVNX Class aircraft carriers, as well as ensure the safe and reliable operation of existing reactors. The reduction in operating plant maintenance periods places greater emphasis on thermal-hydraulics, structural mechanics, fluid mechanics, and vibration analysis work to accurately predict reactor performance and to avoid problems. The continued push for longer life cores also means we will continue to operate reactors beyond our operational experience base for many years to come. Improved analysis tools and understanding of basic nuclear data will allow us to predict performance more accurately and safely through a more than 30-year core life. Other efforts in this area are dedicated to revising core manufacturing processes to reduce cost and hazardous waste; perform reactor safety analyses; accomplish component and system development efforts to support the Navy's acoustic requirements; and develop improved shield designs to reduce costs and radiation levels.

—The $118.2M request for Plant Technology will allow Naval Reactors to develop and analyze those systems that transfer, convert, control, and measure reactor power to maximize plant performance. The request reflects the requirement to design and develop CVNX steam generators—the largest developed to date—as well as instrumentation and control equipment for the new carrier reactor plant. Development of technologies in the areas of chemistry, energy conversion, instrumentation and control, plant arrangement, and component development will continue to improve performance and address operational problems. Naval Reactors is also developing components to address known limitations or to improve reliability, including a redesigned main coolant pump for the *NIMITZ* Class plants and new instrumentation and power distribution equipment to replace older, technologically obsolete, and increasingly hard-to-support equipment.

—The $127.6M request for Materials Development and Verification is the amount necessary to conduct essential material analysis and testing as ships are kept in service longer than originally intended, and materials are called upon to perform safely and reliably over longer time periods. Effort on the core and core structural materials includes testing and analysis of fuel, poison, and cladding materials to verify acceptable performance, as well as developing improved materials with enhancements such as reduced susceptibility to corrosion or swelling. Testing and development of reactor plant materials also ensures reliable performance and leads to improvements such as reduced cracking and stress.

—Evaluation and Servicing ($134.0M in fiscal year 2001) decreased 17.2 percent from fiscal year 2000. The decrease is primarily due to completion of A1W prototype defueling and reduction in inactivation work at Naval Reactors Facility, Idaho, and at the S1C prototype in Windsor, Connecticut. Evaluation and Servicing funds the operation and servicing of land-based test reactor plants and Naval Reactors' share of the Advanced Test Reactor, a specialized materials testing facility operated by DOE's Office of Nuclear Energy Science and Technology. Testing of materials, components, cores, and systems in these plants provides important technical data and experience under actual operating conditions, and allows potential problems to be identified and addressed before they occur in the Fleet. The two operating test reactor plants and the Advanced Test Reactor, with proper maintenance and servicing, will meet testing needs for some time.

Evaluation and Servicing also funds the inactivation of the six prototype plants that have been shut down. Fuel has been removed from all six plants, and extensive dismantlement and disposal have been accomplished. Cleanup of one site, the Windsor site in Connecticut, is nearly complete; regulatory approval for unrestricted release is expected later this year. The other shutdown prototypes are located in Idaho and New York on sites that have continued use for the Program. At these sites, we have defueled the plants and are con-

ducting plant and site remediation. For those plants that have progressed to dismantlement, the Program desires to complete the dismantlement work as promptly as funding and manpower allow, consistent with published environmental impact statements for those projects.

Program infrastructure and administrative requirements

The $21.4 million in Program Direction request will cover Naval Reactors' 201 DOE personnel at headquarters, the Program's field offices, and the Idaho Operations Office, including salaries, benefits, travel, and other expenses. This staff maintains oversight of the Program's extensive day-to-day technical and administrative operations, while continuing to ensure compliance with growing environmental, safety, and other regulatory requirements, which—notwithstanding our excellent record—necessitate substantial effort.

The $42.2 million in Facilities Operations (a 9 percent decrease compared to fiscal year 2000) will maintain and modernize the Program's facilities, including the Bettis and Knolls laboratories and the Expended Core Facility (ECF).

The Construction funding request in the amount of $17.3 million principally provides for refurbishment and replacement of the Program's facilities. This includes continuation of West End Modification to the ECF Dry Cell project to allow transfer of nuclear fuel from the Idaho Nuclear Technology and Engineering Center to ECF for interim dry storage, as well as beginning the Major Office Replacement Building project. Overall, investment in these various projects will extend the lives and improve the efficiency of the Program's facilities.

NNSA IMPLEMENTATION

The Office of Naval Reactors within the Department of Energy transferred into the NNSA on 1 March 2000. The efforts expended for this transition ensured that there have been no interruptions in Program operations or support for the Navy. Naval Reactors' smooth transition can be primarily attributed to:

—The hard work of the Congress and their staffs in invoking and preserving the Naval Reactors' Program charter, Executive Order 12344, in Title XXXII; and

—The unique nature of the Program, which has a single-mission focus with laboratories and field offices solely dedicated to naval nuclear propulsion.

Naval Reactors' Executive Order provides the Program with the tools necessary to ensure the continuation of its historical technical and managerial excellence. For example, because the Program maintains total responsibility for administration and because the Director has a mandated long term (8 years), I can ensure that areas essential to our Program's success (such as radiological controls, nuclear safety, environmental safety and health, and security) continue to be mainstreamed into all aspects of our daily work.

CONCLUSION

The Naval Reactors Program recently moved into its second half century of successfully supporting the Nation's national security with safe and effective nuclear propulsion plants for the Navy's most formidable forward-deployed ships. At no time in the history of our Program has the value of nuclear propulsion been more clear. As the Navy diligently works to more efficiently meet increasing worldwide demands with decreasing assets, naval nuclear propulsion eases the strain.

Nuclear-powered warships' long lives, ability to surge to meet emergent requirements, and fast transits allow our Nation to ensure that American forces are in place when needed. No other nation has this capability. To a large extent, the credit for this capability belongs to the wisdom of the Congress, which has consistently supported our Program, our ideas, and the way we conduct business.

Naval Reactors, working with the Navy and the DOE, is committed to maintaining this record of excellence and ensuring that our technology meets the rigorous demands of the 21st century. Your support will continue to be needed and appreciated.

NAVAL REACTOR OPERATIONAL SAFETY

Senator DOMENICI. Thank you very much, Admiral. I remain totally and absolutely convinced that your activities indicate a way to have safe, totally safe, nuclear power and secure your own—in terms of within your organization you have your own security.

We have not heard of any leaks, or thefts of secrets from your Department and, frankly, the best reason we can put forth to the

American people with reference to nuclear power and its future is to cite the record of the U.S. Navy, with 103 reactors that are the same kind of reactors we have got in our inland cities, but they are afloat in the ocean, or under the ocean and, if something were to happen there, they are in the midst of all of the dangers we talk about would be right there in the water and almost every port in the world accepts you with your engines on, right?

Admiral BOWMAN. Yes, sir.

Senator DOMENICI. And you know, it is just amazing that the United States, with all of that going on, and all of that proof, we are walking around wondering whether we can have nuclear reactors in the future on the continent of the United States, and I use you as an example.

WOMEN SERVICE ON SUBMARINES

But now I have a tough question, because one of the youngsters submitted a question directed at you, Admiral Bowman, and it says, when will women be able to serve on submarines?

Admiral BOWMAN. Well, that is an excellent question and it has, unfortunately, not a short answer.

As the former Chief of Naval Personnel, having absolutely nothing to do with reactor technology, I studied this issue very closely. I was, in fact, in that role as the Chief of Naval Personnel when the combat exclusion law was passed in 1994, and I worked diligently to include women in as many of our combatant ships and roles as possible.

There are many good reasons to consider bringing women into submarines. However, a submarine represents a very major challenge to our desire to integrate women fully into the Navy. Frankly put, it is difficult to imagine being able to achieve the necessary privacy that we would all feel comfortable with on board this very cramped and equipment-dense platform, so I will tell you that we are continuing to study it, but we do not see an immediate breakthrough in this.

We do have women in the Navy's nuclear power program, Mr. Chairman. I am happy to report we have 100 women officers on board our nuclear-powered aircraft carriers today. We have on the order of 400 enlisted women on our nuclear-powered aircraft carriers working inside the Naval Reactors program, and they are moving into all walks of life in that regard.

Senator DOMENICI. Thank you very much. That is the best we are going to do today, okay.

Senator REID. Mr. Chairman, to see the progress made, all you need to do is read John McCain's book about his father. Was it his father, or grandfather?

Admiral BOWMAN. His father was a submariner.

Senator REID. Boy, things have changed a great deal, and they certainly have. I read that myself, Faith of Our Fathers.

UNITED STATES HELPING THE RUSSIANS CONTROL THEIR NUCLEAR WEAPONS

Senator DOMENICI. Thank you very much for your comment, Senator.

Could I, before these young people leave, and then I will go right to the General, could I ask you, Dr. Gottemoeller, I am sitting out there and I am listening to you talk about the United States spending all of this money in Russia to establish or to open up some of their nuclear cities, to pay for some of their scientists, do other things for them. Maybe I would ask you, are you serious? Why are we helping Russia?

Ms. GOTTEMOELLER. That is a very good question, Mr. Chairman, but it is in the national security interest of the United States because, after the Soviet Union broke up in the early 1990's, we were facing the danger of a chaotic break-up of the enormous Soviet nuclear arsenal, and that chaotic break-up could have led to a lot of warheads and nuclear materials simply walking out of Russia and ending up in the hands of terrorists or third countries not friendly to the United States.

Senator DOMENICI. Including their scientists.

Ms. GOTTEMOELLER. And their scientists as well, because they were not getting paid much money, and many of them were poverty-stricken, and they were getting job offers from places like North Korea and Iran, so it is very important for us to step up to this challenge as a national security challenge for the United States. It deals with threats to our national security.

Senator DOMENICI. General, it is a pleasure to have you.

STATEMENT OF GEN. EUGENE E. HABIGER

General HABIGER. It is my pleasure to be here, Mr. Chairman. I thank you for the opportunity. I would like today to run through the Department of Energy's fiscal year 2001 budget request for the Office of Security and Emergency Operations. Mr Chairman, I would request my written comments be entered into the record, and I will keep my comments here this morning very brief.

Senator DOMENICI. It will be made a part of the record.

General HABIGER. Thank you, sir. This past year, the Department took unprecedented steps to address major internal security problems and we have made, Mr. Chairman, significant progress in fixing those problems. The Cox and the Rudman reports provided a wake-up call that emphasized the urgency for needed change in the Department's approach to its security responsibilities.

Our proposed budget response to this wake-up call in our new security organization, which was not even a figment of anyone's imagination last year at this time, when the fiscal year 2000 budget was being briefed to this committee, is also a result of that wake-up call.

With your permission, Mr. Chairman, I would like to quickly introduce the leadership of my security team. Mr. Joe Mahaley. Mr. Mahaley is back behind me, sir. Mr. Mahaley is in charge of our safeguards and security program, and his claim to fame, in addition to doing a superb job since going into that job in 1997, he got his training at the U.S. Naval Academy, so he has a solid foundation to do this job.

Next is Major General (retired) Boomer McBoom. Boomer is in charge of emergency operations and emergency response. Boomer was wing commander of the F–15 outfit that was first into Saudi Arabia in 1990. He also served for 2 years at National Military

Command Center, so he has got a tremendous background in emergency operations.

Mr. John Gilligan. I have known John for many years. He was my source selection authority when I was Commander-in-Chief of the Strategic Command for my information technology systems. He came over from the Department of Defense, and is the CIO and Cyber Security Chief for the Department of Energy.

And finally, but not least, Mr. Chairman, is Ms. Nancy Holmes. Nancy is in charge of our resource management. She is the one that has pulled together our budget. She has been working at the Department of Energy for nearly 40 years, and she is awesome, sir.

FISCAL YEAR 2001 BUDGET REQUEST

That is the team, and each of these professionals has been totally involved with our fiscal year 2001 security request of $340.4 million that comes before this committee today. This request represents an increase of 16.5 percent over our fiscal year 2000 funding level. The majority of this increase funds additional requirements in cyber security, critical infrastructure protection, and program direction.

The fiscal year 2000 level of $292.2 million includes an additional $8 million supplemental request, which is still working through the system. This additional $8 million is to provide adequate staffing for the Office of Security and Emergency Operations, and to support our cyber security initiatives.

Next, Mr. Chairman, I would like to say a few words about our fiscal year 2001 budget amendment that will be submitted to Congress in the near future. Strong security is based on a foundation of clear line management authority, responsibility, and accountability. To do this, we must address the control and accountability of security activities within the Department. Historically, security activities were funded from overhead accounts at the DOE National Laboratories and other facilities. There was no single source for reviewing or accounting for the security budget.

To remedy this, and to strengthen our ability to manage the responsibility of this office, in August of last year the Deputy Secretary directed that the DOE fiscal year 2001 budget request include security as a specifically identified direct-funded activity within my office. This, Mr. Chairman, is the first time a unified security budget has been submitted. This amendment will provide the Department with the funding authority to help strengthen DOE, provide security, allow better management of funds, provide visibility to the Department's commitment to appropriately fund the security throughout the complex and, finally and most importantly, those responsible for security in the field will have an advocate.

PREPARED STATEMENT

In closing, Mr. Chairman, we understand our security challenges, we understand that we must meet those challenges, and we will, with your support. Thank you.

[The statement follows:]

PREPARED STATEMENT OF GEN. EUGENE E. HABIGER

INTRODUCTION

Mr. Chairman and distinguished members of the Committee, thank you for the opportunity to appear before you today to testify on the Department of Energy's fiscal year 2001 budget request for the Office of Security and Emergency Operations (SO).

This past year the Department took unprecedented steps to address major internal security problems and we have made significant progress in fixing those problems. Publication of the Cox and Rudman reports emphasized the urgency for needed change in the way the Department performed its security responsibilities. As the Rudman report correctly concluded, security at the Department had suffered from diffused authority and inattention. The confidence and trust of both the American people and Congress began to fade when enormous negative media coverage brought national attention to security-related incidents at the national laboratories. Combined with DOE's historical track record of security deficiencies, criticism of the Department as an ineffective and incorrigible agency incapable of reforming itself prevailed as public sentiment.

The Secretary directed an abrupt end to this unacceptable situation and in May 1999 announced his Security Reform Package—the most sweeping reform of security programs in the Department's history. This comprehensive plan, which included the creation of the Office of Security and Emergency Operations, gave DOE the tools and authority needed to detect security infractions, correct institutional problems and protect America's nuclear secrets. Of paramount importance, was the need to change the security culture at DOE and establish a program to re-energize and restore confidence in the Department's security program.

FISCAL YEAR 2001 BUDGET AMENDMENT

Today, I will focus my testimony on the current budget before the Committee. However, before I do that, I feel the need to say a few words about an fiscal year 2001 Budget Amendment that will be submitted to the Congress soon. This amendment will provide the Department, for the first time, with a unified separate budget for its safeguards and security program. It will provide the Department with the funding authority to help strengthen DOE-wide safeguards and security, allow better management of funds, and provide visibility to the Department's commitment to appropriately fund safeguards and security throughout the complex. We believe this action, coupled with the Department's commitment to change the security culture, refocus its commitment to security, and the establishment of the Office of Security and Emergency Operations, will correct institutional problems and ensure that we protect America's nuclear secrets.

Strong security is based on a foundation of clear line-management authority, responsibility and accountability. To implement change, one of the first steps required was to address the control and accountability, or lack thereof, of security activities within the Department. Currently, safeguards and security activities are funded from overhead accounts at the DOE national laboratories and other facilities. There is no single source for reviewing or accounting for the security budget. To remedy this and to strengthen my ability to manage the responsibilities of this office, in August 1999 the Deputy Secretary directed that the DOE fiscal year 2001 budget request include Safeguards and Security as a specifically identified, direct-funded activity within SO, which the pending budget amendment will accomplish.

FISCAL YEAR 2001 BUDGET REQUEST

Now, let me turn to the fiscal year 2001 budget request of $340.4 million that is before this Committee today. This request represents an increase of 16.5 percent over our fiscal year 2000 funding level. The majority of this increase funds additional requirements in Cyber Security, Critical Infrastructure Protection and Program Direction. The fiscal year 2000 level of $292.2 million includes an additional $8.0 million supplemental request. This additional $8.0 million identified in fiscal year 2000 is sought to provide adequate staffing for the new Office of Security and Emergency Operations and to support cyber-security improvements.

SECURITY AFFAIRS

The Office of Safeguards and Security (OSS) ensures the protection of the Department's Special Nuclear Material, classified information, and facilities against theft, sabotage, espionage and terrorist activity. As part of the Security Reform, we have developed improved security policy and provided assistance to sites in implementing

these revised policies. We are modifying current technologies for safeguards and security application and developing new safeguards and security technologies based on identified user needs.

For fiscal year 2001, this program's budget request of $60.2 million reflects increases in response to the U.S. policy on counterterrorism, for the initial implementation of nuclear/chemical/biological (NBC) programs across the DOE complex, by providing NBC protection, training and chemical/biological detection equipment. Our Information Security program has expanded its information assurance forensics analysis capabilities to support investigations and prosecutions of unauthorized disclosures of classified information. We have increased our focus on development of physical security technology applications to address vulnerabilities at DOE sites, and on the testing of delay tactics for use around the DOE complex.

Unclassified foreign visits and assignments to Department of Energy national laboratories are vital to ensure that U.S. scientists remain knowledgeable of developments throughout the scientific world. Consequently at the end of last fiscal year, we established a new Office of Foreign Visits and Assignments. This Office has made tremendous strides in implementing the appropriate balance between enabling international scientific exchange while ensuring the protection of national security interests. A number of changes have occurred in the way we manage foreign nationals who visit our facilities. Specific changes include: involving counterintelligence, nonproliferation, export control and security officials at the national laboratories in the review process authorizing visits and assignments from foreign nationals; extending security oversight measures to DOE headquarters and DOE-sponsored off-site visits and assignments; granting the Secretary of Energy sole authority to approve visits and assignments from terrorist-list countries; and removing authority for facility directors to grant waivers of the DOE security requirements. Fiscal year 2001 funding will be used to upgrade a centralized tracking system for all foreign visitors or assignees at DOE facilities. It will also be used to enhance education and awareness activities at DOE facilities to ensure that all personnel are fully cognizant of the responsibilities associated with hosting foreign nationals.

The Security Investigations program is requesting $13.0 million in fiscal year 2001. The request funds background investigations for DOE-wide federal employees, headquarters support services, protective force contractors, and miscellaneous nonfederal personnel, who, in the performance of their official duties, require a security clearance permitting access to Restricted Data, National Security Information, or Special Nuclear Material. Offsets of $20.0 million will be provided by four other program offices (Defense Programs, Environmental Management, Nuclear Energy, and Science). In fiscal year 2001, the offset program organizations will be severely impacted due to language contained in the National Defense Authorization Act for fiscal year 2000 (S.1059, Section 3144). Background investigations on individuals who are employed in certain sensitive positions must now be conducted by the Federal Bureau of Investigation (FBI) rather than the Office of Personnel Management (OPM) at a much higher price. There has been no funding increase to support our field contractor requirements. Without the necessary funding, the Department may need to submit a notification letter to Congress regarding a program funding increase for the third year in a row.

DECLASSIFICATION

Under the authority granted in Public Laws 105–261 and 106–65, the Office of Nuclear and National Security Information continues its program to review other-agency documents scheduled for declassification under Executive Order 12958, to determine if they contain sensitive nuclear design information, i.e., Restricted Data and Formerly Restricted Data. The office also continues its effort to declassify the Department's own archived documents under the President's Executive Order on classification and declassification. Our responsibility to the American people under these initiatives is twofold: protecting the nation's most sensitive nuclear design information from inadvertent release; and eliminating excessive secrecy through the declassification of documents not warranting protection.

The declassification budget request for fiscal year 2001 is $4.2 million more than our fiscal year 2000 appropriation, representing a 25 percent increase over the fiscal year 2000 funding level. The majority of this increase is required to implement Public Law 106–65, section 3149, which supplements Public Law 105–261 and requires the Department to audit an additional 450 million pages of documents at the National Archives and Records Administration (NARA) which have already been declassified by other agencies and designated for release by NARA. To date, the Department has audited in excess of 64 million pages of documents under these two statutes and, in the process, has discovered erroneously declassified documents con-

taining Restricted Data and Formerly Restricted Data. To date, the audits have prevented the inadvertent release of significant amounts of sensitive nuclear weapon design information.

Also in support of its program under Public Law 105–261 and Public Law 106–65, the Office of Nuclear and National Security Information conducts Restricted Data/Formerly Restricted Data training courses for other-agency declassification reviewers. These courses are designed to alert other-agency reviewers of the presence of critical nuclear weapon design information which may be embedded in documents earmarked for declassification. We have already trained over 1,000 reviewers; during this fiscal year, over 150 reviewers have attended these training courses. We project an additional 500 reviewers will attend the courses through the end of this fiscal year.

As hundreds of millions of pages of data are reviewed for release throughout government, the Department's program to ensure the appropriate protection of information so vital to the nation's security must be maintained.

CRITICAL INFRASTRUCTURE PROTECTION

The Department created the Office of Critical Infrastructure Protection to direct DOE's responsibilities under the national mandates of Presidential Decision Directive 63 regarding work with industry to develop and implement a plan to protect against, mitigate, respond to, and recover from attacks that would significantly disrupt the nation's energy infrastructure. The fiscal year 2001 request of $13.0 million supports policy and R&D activities necessary to fulfill these responsibilities.

An important DOE mandate is to assure reliability and security of the energy grid. The nation's energy infrastructures (electric power, oil and gas) are susceptible to threats from natural, accidental, and intentional sources. The threats are directed at both physical and cyber assets of the energy sector. Recent trends toward increasing complexity and interconnectedness of the energy sector serve to increase the potential for significant disruptions to energy supply, if an element of the infrastructure is damaged, destroyed, or otherwise compromised. Because the energy grid is the life blood of our nation's critical infrastructures, such significant disruptions can have major impacts on the economy, human health and safety, and national security. Operating under the guidance of PDD–63, DOE funds activities to address and remedy the energy sector's vulnerability to the increasing diversity of threats.

Focused on the thrust areas of Analysis and Risk Management and Protection and Mitigation Technologies, the critical infrastructure program will result in real-time control mechanisms, integrated multi-sensor and warning systems, and risk management and consequence analysis tools that will help the national energy sector address the physical and cyber threats to, and vulnerability of, the energy infrastructure. DOE also will develop infrastructure interdependence tools to improve the capability to assess the technical, economic and national security implications of cascading energy infrastructure disruptions and to improve the reliability and security of the nation's interdependent energy grid. This program will involve collaboration between DOE and the major stakeholders, including private sector owners of energy elements, other federal agencies involved in critical infrastructure protection, and state and local governments. The capabilities of the national laboratories, academia, and private research organizations will be used to develop and implement the program.

CYBER-SECURITY

When our office was established in July 1999, a single cyber security organization, under the direction of the Chief Information Officer, was included to address the pervasive lack of attention to our cyber security practices in a world of increased computer hacking and cyber terrorism. The $30.3 million requested for the Cyber Security Program in fiscal year 2001 is an increase of $17.0 million over the fiscal year 2000 request. This increase provides policy and planning, training, technical development, and operations to provide consistent principles and requirements that line management can implement for the protection of classified and unclassified information used or stored on Departmental Information Systems. The policies for the protection of this information will ensure that classified and unclassified information is protected consistently across the various elements of the Department in a cost-effective manner and consistent with the protection of this information in paper form.

A goal of the program is to implement enterprise-wide training to a broad audience of individuals responsible for implementing Cyber Security programs and protection measures. These include, but are not limited to managers, system administrators, Cyber Security professionals, and general users. Training will use commer-

cial and government off-the-shelf materials where available. The fiscal year 2001 request provides for an increase in Computer Incident Response Capability (CIAC at LLNL) from 15 to 25 contractor staff to provide cyber security incident response, analysis of cyber intrusions and attempted intrusions, and warning capability for the Department.

A large portion of the funds will support the Cyber Security Core Architecture engineering and deployment, which will enable the program to implement baseline Cyber Security capabilities at 12 sites. The Public Key infrastructure (PKI) Initiative started in fiscal year 2000 will be enhanced to operate and expand inter-site PKI capability for the protection of unclassified data in transit, as well as limited capability for protection of unclassified data in storage. The PKI Initiative will also provide Departmental infrastructure to support token or biometric authentication.

The program will also provide for Departmental cyber security tools and capabilities to support the establishment of a limited testing capability for commercial off-the-shelf (COTS) cyber security products prior to being deployed in the Department. There is a continuous need to evaluate and potentially modify COTS cyber security products: (1) to ensure that the application of these products does not significantly interfere with primary organizational or computer missions, and (2) to identify weaknesses in COTS products that must be mitigated to ensure a consistent, comprehensive cyber security implementation.

EMERGENCY OPERATIONS

The fiscal year 200l budget request for the Office of Emergency Operations is $93.6 million. This represents a $5.94 million technical adjustment over the fiscal year 2000 appropriation. This adjustment restores much needed funding for the Radiological/Nuclear Accident Response program.

The Office of Emergency Operations serves as the central organization within the Department of Energy for all emergency functions. To carry out this role, the office employs the necessary command, control and communications capabilities augmented by trained response personnel to ensure the successful resolution of an emergency event affecting Departmental operations and activities. In addition, the office ensures that the Department's seven unique assets (Aerial Measurement System, Atmospheric Release Advisory Capability, Accident Response Group, Federal Radiological Monitoring and Assessment Center, Nuclear Emergency Search Team, Radiological Assistance Program and Radiological Emergency Assistance Center/Training Site) are in place to provide an appropriate response to any DOE facility or nuclear/radiological emergencies within the U.S. or abroad. These capabilities are organized into an integrated set of radiological emergency response assets which provides overall program management and the organizational structure during both emergency and non-emergency conditions for the personnel, equipment, and activities that collectively comprise the program.

For fiscal year 200l, by prioritizing our program efforts, we will continue to improve and expand our capabilities to effectively plan for and respond to an emergency event. For example, we will: increase the number of Department-wide drills and exercises and evaluate our readiness to implement the Department's emergency management system; improve our atmospheric release plume modeling capability; expand the number of sites and technical features of the Emergency Communications Network; and increase our training of emergency management personnel at the Emergency Operations Training Academy.

PROGRAM DIRECTION

The fiscal year 2001 request for Program Direction of $89.4 million will provide the salaries, benefits, travel, support services, and related expenses associated with overall management, oversight, staffing and administrative support necessary to carry out the Security and Emergency Operations Program. This represents an increase of $7.6 million over the fiscal year 2000 appropriation and requested supplemental. The requested increase in funds would provide additional staff and cover their associated costs (including inflation).

CONCLUSION

Today, the Department has raised its level of consciousness regarding security activities that led to the deterioration of security awareness and education. We now function in a security environment decidedly different from the one we faced a decade earlier. We cannot directly control or alter the threats to the security interests entrusted to our care. What can be controlled, however, is our ability to plan, train, and respond should these threats ever materialize. The changing security environment and other threats over the past decade have fundamentally altered the De-

partment's security perspective and posture. This is a significant challenge, but one that the Department of Energy must be prepared to meet.

The bottom line is clear . . . The Department has made significant progress over the past year in standing up a new security organization. We're seeing a change in the culture and an improved level of security awareness. With the support, cooperation and buy-in of other program offices across the DOE complex, the initiatives that the Secretary has put forth are working. Our professionals are committed to serving their country in an environment that produces the very best science within a framework of security that is effective, but not unjustifiably intrusive.

NATIONAL IGNITION FACILITY

Senator DOMENICI. Thank you very much, General.

Senator Reid.

Senator REID. Thank you a lot, Mr. Chairman.

General, one of the questions was answered—I guess when I say General, I have to identify the General. Like when people say Senator around here, everybody turns around.

General Gioconda, you answered a question that I had as to when the new NIF baseline will come up, and you said around June 1.

General GIOCONDA. Sir, that is the reporting requirement. Secretary Richardson has made a commitment, understanding your accelerated mark up schedule, to provide to you, as early as possible the NIF options.

In fact, this afternoon I am meeting with the Secretary to go through the options that have been developed and take him through several weeks of work outlining what options are available. They range from zero, no continuation, to all the way through full funding to get the program back on track.

Senator REID. General, I hope that you heard not only what I said, but how I said it. I personally feel we have really been misled. We were working under very tight budget constraints and we were promised, and we said, is this going to work out, and I think we were misled.

They recognized once we started we never stop anything around here. Well, that is not quite true. We have stopped things, and when I mentioned the Superconducting Super Collider, that was a tough thing that we did, but I think NIF, unless we get that resolved, there is going to be more than this Senator concerned about it. This is something, I can just see how this is going to develop on the floor. I hope you got that message.

General GIOCONDA. Yes, sir. There are three steps we have been engaged in with NIF, and when you say you have been misled, that is quite frankly how the Secretary feels. He made his speech that it was on-cost, on-schedule, and it was not communicated to Defense Programs, nor was it, obviously, communicated to the Secretary. The first thing that the Secretary had to do, was determine the program, who do you trust and what is the truth.

Then he had to put together a management team to develop the options that you can rely on if you were to move forth with the program, and that is kind of the step we are in now. Many people have been reassigned, moved out of their jobs, resigned, and been told, quite frankly, their performance was unacceptable.

Next, I believe, we have put together, a good management team. We have put in the hands of the lab what they are world-class at, which is science, and we have put in the hands of people who are

world-class in integration, which is not the lab, and that is what got them in trouble. Now what we are figuring out is the path forward, and that is what we owe you.

Senator REID. General, I am not saying this because Secretary Richardson is from New Mexico, or that the chairman of the subcommittee is from New Mexico. But I really feel, again speaking only for me, that I have gotten better information from the two labs in New Mexico on a continual basis than I have from the outfit in California, and I am going to take a real close look at programs that emanate from that facility. I have the distinct impression that they feel they own this subcommittee, and they should understand, all those within the sound of my voice, that they do not.

General GIOCONDA. Sir, what I would like to offer, if I could at this point in the record, is to give you, when the Secretary approves, two white papers, one classified and one unclassified, on NIF, what its requirements are, how it fits Stockpile Stewardship, and how it relates to the rest of the program. When that is approved by the Secretary, sir, I would like to offer that to you, because I think that is important to what you are saying—how NIF relates to all of Stockpile Stewardship, and how all of stockpile stewardship relates to each other.

DEVICE ASSEMBLY FACILITY

Senator REID. I know the chairman has so many things to do, but I have another question or two that I would like to ask.

We constructed at the Nevada Test Site, at great expense, a Device Assembly Facility. We did that because the original facility was real close to the perimeter. It was reachable, and this is something we were very proud of. Well, it has not been used much at all since we spent a large amount of money building it. It is only 20 to 25 percent, at best, utilized today.

I would like you to take a look at this facility and have your people give me a report as to what can be done to more fully utilize this facility. The Department's combined budget request for national security for next year is about $7 billion, and it seems that this facility simply isn't being used at all, so I would like you to get back to me on that.

Senator DOMENICI. Could it be back to the committee?

Senator REID. Yes, please. Of course.

General GIOCONDA. Sir, our Albuquerque Operations Office and our Nevada Operations Office are doing that right now as part of our infrastructure plans. So yes sir. We will get it back to you.

[The information follows:]

DEVICE ASSEMBLY FACILITY

The Device Assembly Facility (DAF) at the Nevada Test Site (NTS) was designed to assemble test devices for underground nuclear tests. With the cessation of underground testing, new missions have been sought for the facility. Currently there are four mission assignments for the DAF: (1) support to the subcritical experiments; (2) readiness to resume underground nuclear tests; (3) readiness to receive damaged U.S. nuclear weapons; and (4) plutonium target assembly for the JASPER two-stage gas gun. Additional long-term missions for the DAF are being studied by the Los Alamos and Lawrence Livermore National Laboratories in conjunction with the Albuquerque and Nevada Operations Offices. Activities being looked at are those which would add strength to the current NTS mission and help build and maintain a cadre of experienced nuclear explosives technicians and engineers such as stock-

pile surveillance activities including advanced aging units, drop testing, limited dismantlement, shelf life evaluation, and other lab research and developments. The DAF is also being considered as an alternative for the relocation of the Los Alamos Critical Experiments Facility now in Technical Area 18 at the Los Alamos National Laboratory and as a possible monitored disassembly facility under future arms control regimes.

Senator REID. Mr. Chairman, I have a series of questions that I will submit. As you know, I have spoken to you on the Atlas, the pulse power facility. I have a significant number of questions on that that I would like you to focus some attention on. I think that again, for whatever reason, I was told certain things. We put certain things in our last bill. They just have been ignored. I would like you to take a look at that.

Senator DOMENICI. I think that is really important. We went through a lot of effort last year to work on this, and it looks like it is not happening. We just have to know all about it. We would like to know why.

INTEGRATED STRATEGY

General GIOCONDA. You are talking about the megastrategy or integrated strategy?

Senator REID. Yes, with particular emphasis for me on the Atlas program.

General Habiger, when can we have an exact date for the security budget, your security budget? When are you going to be able to do that?

General HABIGER. Mr. Chairman, that budget left the Department of Energy 2 weeks ago. It is now over in the Office of Management and Budget. We are going over there today to try to break that loose, and I cannot give you a date, sir.

Sir, I should have had this over here 2 months ago, and I am very frustrated that it is not here.

Senator REID. Well, I think we are very fortunate, and I speak for all four of you here. I mean, I think that if people knew the quality of folks that we had running this most important part of our national security, our Government today, they would be and should be very proud and I think this is a great collection of minds, with a lot of experience, and I am very happy to be working with you.

Mr. Chairman, Thank you.

NEED FOR FUNCTIONAL NNSA

Senator DOMENICI. General Habiger, I am not sure, because of time, that I will get around to questions. I will probably submit them to you, but let me suggest that you probably have done the best job, looking at the past, of trying to consolidate the office that you have alluded to, the security office, but I still want to tell you what I believe.

I believe that the office is going to be no better ultimately than the management scheme for nuclear weaponry within the Department of Energy. I believe it is subject to so many cross-currents of regulations, that is, the function that we would try to isolate and call nuclear weaponry, that it is almost impossible for anybody to truly have their hands around security or anything as generic as

that, and that is why we—will ask the Secretary, but that is why we believe it is very important that the law that we pass be complied with, and that we begin the structural reform.

You heard the Admiral. Now, they are not comparable programs, but you heard that everything to do with the naval reactor program is under one person, one commander, all of it—security, production, management, the whole scheme, and to a very real extent we have watched in the past when a problem comes up in the Department, a new box is created, and I am not suggesting your box, because you could probably put something together that would describe it better than the rather profound word, box, but we watched it, and that is what happens.

A big problem occurs, and a new box is created, but it gets lost when it comes into contact with the proliferation, the pieces of the Department that want to get a piece of the action of what is going on. I want you to know that it is my plain, simple evaluation that there will be an NNSA in full function soon and it will be sooner rather than later, because whether we can make it work with Secretary Richardson, who has a couple of very big concerns—and it is just a matter of time, but it is going to be done.

And so I urge that as you put this apparatus together and suggest a new budgeting approach where you are going to do more harmonizing, I hope you will look at the statute on NNSA and make sure that you are not building something that will have difficulty fitting into that, because I assure you that when you send it up here we are going to look at it that way, and this is one Senator—and I think on this score I will be listened to.

I am not going to address your amended request if I see this as building a brand-new box that is to be independent and will not fit into the NNSA that we modeled somewhat after theirs, but certainly Admiral Chiles and others know that it is different than yours, so we created what is necessary, it seems, to try to do a better job for the next decade.

ADEQUACY OF STOCKPILE STEWARDSHIP PROGRAM

Now, General Gioconda, I have a lot of questions, but what I am really concerned about is the adequacy of the 2001 budget. Even though we all sit here and say, isn't it good, it has got an increase in it, you yourself must be familiar with some things that are pretty critical that we may not be able to do under this budget that we ought to be doing. I wonder if you could tell us a few of those.

General GIOCONDA. Sir, the one thing, and thank you for the very kind words about Dr. Reis. As an Italian, he is still my godfather.

Sir, the three things that have to be the priority in stockpile stewardship is what I call people, places, and process. The first is the people. If we do not attack that issue, to get the next generation trained, make sure the people believe this is a vital national issue and stay with the program. This budget, there is not enough to do that, but we are working on the plans to do that.

The second thing is, places, infrastructure. As you mentioned, if you look back at the history of Stockpile Stewardship in the last 5 years, the thing that has caused us the most problems is start-up of infrastructure. It has not started up very gracefully.

If you look at the way we designed new infrastructure—we built a new weapon, then the infrastructure was updated as the new weapon flowed through the system. Well, since we do not have that forcing function any more, we have to figure out how we are going to update the infrastructure. With 50 to 60 percent of the current stockpile coming through the complex for refurbishment, we need to do that very quickly.

The third part is the process, which drives the other two. We have to make sure that we have a process that is based on requirements, requirements that can stand your review, our review, and go forward on those. I think we now have the process. Those other two areas, infrastructure and people, quite frankly, have paid the price any time we've gotten in a budget crunch.

Senator DOMENICI. Well, while we look at some very important issues regarding the maintenance and our ability to attract the expert personnel we have to look at some very mundane-type things, because they are very adversely affected by polygraph, the polygraph positions of the U.S. Government, and limitations on laboratory research and development and travel.

I have some very specific questions, but I will submit them, but essentially I am very hopeful that we are developing a polygraph sense about the laboratories that is way, way far from let's have polygraphs for everybody, and that it will not be that. It will be a program that is directed at polygraphs being an integrated approach to try and do better surveillance of the activities of our scientists and those in the labs. You are developing that.

POLYGRAPH TESTS

General GIOCONDA. Sir, I consider myself the spokesman for that in the Department, and just recently we have had several meetings with the lab directors present. General Habiger has been there, and we sat down and worked out the details, and so the implementers understand what they are implementing.

I have taken a polygraph, after 30 years in the Air Force, to understand what it is all about, and we are going through that step-by-step. We are not trying to jump ahead. We are trying to make sure this is all integrated but it is a very fragile area of trust.

Senator DOMENICI. I think it is very important that either you or the lab directors, as soon as practicable, begin to communicate with the workforce, that in fact this is evolving, and whatever they have read—and we are not there yet, so they do not assume they are working just 2 or 3 more years trying to get the hell out of here, as some would say, because I do not want it to be part of my Ph.D. career to end up with me having to take polygraph tests every year, and so I hope we can communicate that is a very, very big morale problem.

Now, also, regarding travel, we had a series of questions, but let's just say, you and I and everybody running the Department knows that people in the laboratory have to travel, right? It is just part of being a great scientist, a great engineer, a great manager of programs. They have got to get out and interact with others. That is part of the academic aspect of their lives, and they have to travel to foreign countries, which some people around do not want that to happen, either, but they have got to.

In fact, any prohibition that they cannot go to Taiwan or communist China, somebody is going to look at that after a while and say, now, who is winning and who is losing in this exchange program, so for the record, you all are concerned about that, are you not, and you are trying to put something together that is realistic, yet not as ambitious as they have had in the past. It was too ambitious and too costly.

General GIOCONDA. Sir, my comment on travel is, we have just got to ask the questions that need to be asked before someone travels. We can't assume the dollars are there. We need to take the GAO comments and implement a process, and then I think, sir, that can withstand anyone's scrutiny.

TRITIUM PRODUCTION

Senator DOMENICI. We had an option called accelerator production of tritium that was a back-up to using a reactor, and incidentally I compliment the entire Department on the success of using the reactor system of the TVA. I never thought we would clear that program that easily but I assume, environmentally and otherwise, that people have looked at it objectively instead of with some of the typical emotionalness, and we are going to proceed.

General GIOCONDA. Sir, the only hurdle we have left is the NRC licensing, and that is the paperwork we are doing this year.

Senator DOMENICI. NRC licensing has become a much more positive and realistic activity in the past 2 or 3 years, and I take a little credit for that, and I am proud of it, but I think they are doing pretty well.

We are thinking about a composite that will involve continuation of accelerator research and include transportation of waste. We think there is a real chance at this point, when we are worried about energy and our dependance, that we would take a real serious look at the science of transportation as well as alternatives for tritium and other things an accelerator can do. We are going to try to put a program together and submit it to you all for your analysis.

General GIOCONDA. We in Defense Programs support that. I resisted the temptation to take the money, because I am blessed with two really good programs that are working very, very well.

No action was taken against the APT program as a bad program. In fact, it was excellent. It made the choice hard. We cut the design capability. We put that in the back seat, and we went on with the engineering because that is important, and we are trying to link up with other parts of the Department to have that program continue, and Defense Programs wants to be a part of that.

NUCLEAR WEAPONS PRODUCTION

Senator DOMENICI. I think we ought to state here for the record and in public that, contrary to impressions and accusations, as the head of stockpile stewardship and your position in the Department, the United States of America to your knowledge, and certainly to my knowledge, is not producing any new nuclear weapon, right? We're not manufacturing any new weapons?

General GIOCONDA. Absolutely not, sir.

Senator DOMENICI. And we are continuing to develop a budget that is predicated upon that premise that we are not going to build any.

On the other hand, the Russians, they keep their stockpile safe, et cetera, by building new nuclear weapons. That sounds strange to Americans, but they build a completely different nuclear weapon, and so they rebuild them. Are you satisfied, in your position, that there is no significant disadvantage to the United States, in the current posture of them building new ones to keep theirs solid and solvent, and us doing ours under stockpile stewardship and replenishment of parts?

General GIOCONDA. Sir, as long as I carry out the second part of my mandate, which is to maintain a design capability and work on that, then I believe that our program, our scientists, our great minds, and our production people will stay sharp—then I think we're okay. But if I just do half, and just fall asleep at the switch, then I will have problems.

But right now, sir, I am confident we are doing the right thing.

Senator DOMENICI. General, let me suggest that one thing we are least capable of doing as a people, probably because of our governance style, is to maintain an effectiveness that is not needed. We just have a very difficult time saying, let's keep the Nevada Test Site ready. I mean, it is hard for us to put money into that kind of a thing, just like it is to put money into maintaining great scientists who are not doing the design and keeping that workforce.

I think it is a very important part of your role, and I think every chance you get you ought to make sure you analyze it from the standpoint of us not cutting corners with reference to the parts of the Department that are attractive to those people we may need if ever this approach is not working.

LONG-TERM STOCKPILE STEWARDSHIP BUDGET

Now, let me talk a minute about the $45 billion framework that comes forth from your 30-day review. Is it possible to meet the stockpile work load to develop the technical tools needed to ensure the reliability of the stockpile and maintain the readiness of the technical facility base within this $45 billion for the over 10 years? Would you just answer it and give us a brief explanation if you think it is?

General GIOCONDA. No, sir. Yes, I will answer it, but no, sir. I have to watch my answers here.

It is important, I believe, to go through and look at what it was. The $4.5 billion over 10 years was a good start as far as what was projected for the program, but a lot of things have changed in the program. I think it has to be a requirements-based program, that you base it on requirements and then you make decisions based on how much and what requirements you want to have done and what requirements you want to put on hold. Our new budget structure will allow us to do that in a much more stringent manner, but I do not think a magic formula at this point is the right way of doing it.

Senator DOMENICI. Well, look, I was just going to tick off some things that have obviously changed dramatically, but I will just use one. Obviously, the NIF overruns could be very substantial. In that

$45 billion in that period, they could be $600 to $800 million, and nobody planned for that. That is a huge amount.

We do not have to have very many of those, and the $45 billion is not available for what you need it for. I believe your continued work with the Department of Defense to make sure they are fully supportive of our defense work so that they treat it like regular defense work when they consider how much you need—and then we will have to do that up here.

People think the DOE nuclear weapons program is a stepchild. They fund the Department of Defense appropriation, but forget this is defense money as well. This is a continuing problem and is very difficult for us. The Department must push very hard that these are very important defense issues, and that is what they are. We do not need them if they are not defense.

General GIOCONDA. Sir, that is one of my jobs as a General Officer assigned to DOE, to open up the communication between the Departments. What has been very useful is STRATCOM, with Admiral Mies and General Habiger, opening up the communication with the Department. A lot of people in the Defense Department need the same knowledge, and we have to keep that going. I can say it is on a positive upswing.

Senator DOMENICI. Well, I think it is a matter of communications and making sure that the Pentagon knows the importance of these programs, because they will be just as impressed as with the importance of whether we build a new aircraft carrier or not.

General GIOCONDA. Every one of my assistants meets with a defense official once a week, picks one and makes sure they stay in contact, both the Navy and the Air Force, and I do the same, and that is the way to open it, making sure we keep these items center stage.

Senator DOMENICI. I am going to submit questions for your response. For example, to explain the pit production at Los Alamos, what it really is intended to be, and where we are going in terms of our requirements on pits. I guess it is a fair statement to say as of today Pakistan has more ability to manufacture pits than the United States of America. Is that true? Somebody said that to me.

General GIOCONDA. Sir, I am not conversant on the Pakistan program. They obviously did one.

Senator DOMENICI. Well, if they could do one, they are better than us.

General GIOCONDA. Sir, for the record, I will take our stockpile over theirs.

RELATIONSHIP WITH RUSSIA

Senator DOMENICI. Of course. I am just making a point about one little piece of it. It is not always appropriate to do that.

Okay, what I think I am going to do is recess now and submit questions to all three of you. Let me also suggest that in Russia, where you spend a lot of time and where I have some great friends, like Sid Hecker, who spends almost all of his life trying to figure out how to do better over there, this is also a time where we have to be careful about what is going on in Russia.

They have a new president. None of us really know what that means right now. It does not seem to me like he is going to be any-

thing like the president that they have had the last 4 or 5 years over there, and our continued assistance in these areas has to be on the basis that we are getting some real feed-back from them that is tangible and objective, that they are really cooperating in an effort to reduce the threats and to eliminate every opportunity we can for further proliferation.

If that is not happening, that can get turned off awful fast up here, because we are on a thin, thin reed right now in terms of support. I continue to support it, even the new initiative on the cities, the nuclear cities initiative. I have very serious doubts that you can convert those cities the way we think, but I think it is worth a small amount of money to see if we can.

Ms. GOTTEMOELLER. Thank you for your support, Mr. Chairman. It has been an exciting year, as I mentioned in my testimony, but I agree with you, we need to keep on top of the situation and keep in close communication to make sure that we are getting results from the Russian side.

ADDITIONAL COMMITTEE QUESTIONS

Senator DOMENICI. Thank you, we will submit all of the rest of the questions.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTIONS SUBMITTED BY SENATOR PETE V. DOMENICI

CONDITION OF THE NUCLEAR WEAPONS STOCKPILE

Question. General Gioconda, is the nuclear weapons stockpile safe, reliable and secure?

Answer. Yes, the Secretaries of Energy and Defense have recently certified, for the fourth consecutive year, that the safety, security, and reliability of the Nation's nuclear weapons stockpile is assured without the need for underground nuclear yield testing at this time.

Question. Do you have confidence that the weapons in the stockpile can and will perform as designed?

Answer. Yes, the integrity of the existing nuclear weapons stockpile is assured through the execution of the Stockpile Stewardship Program which includes routine surveillance, regular replacement of limited life components such as gas reservoirs and neutron generators, and the replacement or upgrade of other components and subsystems. Each year in the surveillance program, eleven weapons of each weapon type are disassembled and examined. Laboratory and flight tests are also conducted to simulate expected deployment environments. The data from these examinations and tests are compiled and carefully analyzed by the DOE and the national laboratories using extensive computer modeling, which helps to understand the long-term, time-dependent behavior of weapons materials and the implications of any observed changes on weapon life projections.

ADEQUACY OF FISCAL YEAR 2001 BUDGET REQUEST

Question. Are there any critical needs not addressed in the budget request because of the lack of budgetary resources? If so, please explain.

Answer. There are no critical needs that are not addressed in the budget request with the exception of the NIF rebaseline. However, as I testified to, when we've gotten in a budget crunch, it's our people and our infrastructure which seem to have paid the mortgage price. This budget is no different and we know if we don't fix the problems soon they will be very critical. We must recruit and train the next generation of scientists and engineers and it must be done while we still have a cadre of workers whose experience with the stockpile can be passed on to the next generation. There must be a transition period with both the experienced workers and the new recruits on board and that expenditure has been deferred in light of more pressing needs the past few years. At the same time with no new weapons moving

through the complex to force the issue, our investment in our infrastructure has not kept pace with future needs. As a large portion of the stockpile must move through the complex for reburbishments in the coming years that situation must also be reversed.

However, the investments we are making in developing our scientific capabilities are mandatory if we are to continue to certify the safety and reliability of the stockpile without underground testing. That scientific capability is already paying off and we just certified to the President for the fourth consecutive year that underground testing is not necessary at this time. As these scientific capabilities mature these investments will be reduced. Our work with DOD to identify and assess the final technical drivers and schedules for weapon component replacements and our new budget structure will hopefully allow us to more effectively balance the program.

Question. Will the budget request before the committee allow NNSA to meet all DOD annual weapons alterations, modifications, and surveillance schedules? For example, does this budget put us on a schedule to make all of the safety and security upgrades available when the weapons go in for refurbishment?

Answer. The fiscal year 2001 budget request assumes enactment of the supplemental request in fiscal year 2000. If this funding is provided, we will be able to meet all fiscal year 2001 scheduled weapons alterations, modifications, and surveillance requirements. The Department will continue to assess weapon workload priorities to ensure weapons in the stockpile remain safe and secure.

Question. Does this budget request make the appropriate investments in future manufacturing facilities, process development, critical skills so that the NNSA will be able to meet the known future military requirements as well as the requirements of the Stockpile Life Extension Program?

Answer. I believe the balance we have reached in the fiscal year 2001 budget request is the best one to fulfill the requirement to maintain a national deterrent while ensuring a path for the viability of the weapons production complex to produce components into the future. One of the avenues we are pursuing is our production readiness campaigns. In fiscal year 2001, we are proposing in initiate the Secondary Readiness Campaign, which will begin to address these issues for secondary production. These efforts are planned to be expanded in fiscal year 2002 covering two additional production readiness campaigns, high explosives/assembly and nonnuclear component manufacturing. To address the critical skills issues, we continue to fund the Laboratory Directed Research and Development program and have requested the establishment of an analogous program in the production plants, Plant-Manager Research, Development and Demonstration (PMRDD), to attract and retain the best possible people to the laboratories and production plants.

Question. If the Committee were to provide you additional funds, what would be your next priorities and at what level of funding?

Answer. I believe we have struck an appropriate balance in the fiscal year 2001 budget request between Directed Stockpile Work, Campaigns, and infrastructure. Of course, funding for the NIF rebaseline was not included in the request, but we will soon transmit a budget neutral amendment to accommodate the new baseline. As always there are items which could not be accommodated within the budget request, or which could benefit from additional funding, but it is our judgement that these are not critical needs.

ADEQUACY OF 10 YEAR $45 BILLION BUDGET FRAMEWORK

Question. A key outcome of the 30 Day Review was the need for DOE and DOD to refine the process for determining the scheduling of stockpile refurbishing requirements considering military, human, and budgetary needs. What are the critical underlying issues that make this such an important area of focus? What progress has been made to resolve these issues?

Answer. There are never enough resources to satisfy all requirements. Choices must be made. In Defense Programs, the choices are complicated by the fact that the DOE and DOD have had differing views on which requirements should take precedence; stockpile work, scientific and technical tools, security, reliability, or infrastructure. In the final analysis, all of these requirements and many others must be balanced and integrated in order to have a viable and responsible program.

We are working within the program and with the DOD to reach agreement on a prioritized set of requirements. A group within the DOE, the Requirements Assessment and Implementation Team, has started work on a DOE list. In the DOD, the Nuclear Weapons Requirements Working Group, has embarked on a similar task, and both groups are working together to establish a common set of prioritized requirements for the stockpile stewardship program of the future.

Question. In your judgement, is it possible to meet the Direct Stockpile workload; develop the scientific and technical tools needed to insure stockpile safety, security, and reliability; and maintain the Readiness of the technical and facility base within the $45 billion, 10-year budget framework? Please explain.

Answer. The Stockpile Stewardship Program is working, we have been able to certify to the President for the fourth consecutive year that underground testing is not necessary, but we've made some difficult choices as to where limited resources must be spent.

Recognizing the changes that have occurred in the program since its inception, last Fall the Secretary ordered a review of the health and status of the nuclear weapons complex, including its physical infrastructure, and of the status of recruitment, retention, and training of top scientists and engineers needed to sustain the program. While the review indicated that Stockpile Stewardship is on track both in terms of specific science, surveillance, and production accomplishments and in terms of developing a program management structure to improve the certification process, it did provide insight into areas that still need attention.

We are engaged with the DOD in identifying the process for determining the scheduling of refurbishments to more fully consider military, workforce, and budgetary needs. At the same time we must aggressively develop the scientific capabilities required to certify the stockpile without testing. This is proving to be more expensive than estimated at the program's inception and is requiring less than optimum funding for our future infrastructure and for recruiting, retention and training of our people. The Stockpile Stewardship Program is a requirements-based program and it is our determination regarding when those requirement must be meet that drives the budget.

Question. In your view, what is the appropriate annual budget level needed to meet these requirements? Can you even set a baseline for a program still in development?

Answer. There is no absolute formula for determining the annual budget level with the challenge of certifying our stockpile without underground testing. I do believe that our budget each year should be requirements based and not measured against an arbitrary standard and that as we refine and prioritize requirements with the DOD and gain more experience with our developing scientific capabilities the annual budget can be refined to the point where a requirements based future year budget can be confidently forecasted.

NEW BUDGET AND REPORTING STRUCTURE

Question. DOE's fiscal year 2001 budget proposes a significantly changed budget and reporting structure. The new structure integrates the activities under the old Stockpile Stewardship and Management approach into the Stockpile Stewardship Program which consist of 3 main elements: Directed Stockpile Work, Readiness in Technical Base and Facilities, and Campaigns which has 17 sub-elements. General Gioconda, your statement indicates that you are "collecting data in the new structure as a further check on the viability of the approach," Why is this approach being put forth if you are unsure of its success?

Answer. We believe this new business line approach better integrates our program elements, and if approved and implemented, will provide an improved program framework. Prior to receiving official approval of the structure change, we are continuing to fine tune with the Headquarters and Operations Office Chief Financial Officers the categories underpinning the major new structure elements. We are having the M&O contractors collect fiscal year 2000 budget execution data unofficially in the new structure. It allows Headquarters to assure that the new cost categories provide the intended information; it also permits the contractors to begin to develop and put into place the complex cost accounting mapping tools to successfully accomplish the structure change in order to execute it officially in fiscal year 2001.

Making a major accounting and budgeting change is a formidable task, and a transition period is not unusual to assess each measure with the assured confidence that we expect.

Question. The budget justification material for Campaigns provides a very general description of the goals and end states, and provides general, non-specific performance measures for each Campaign. How can the work on critical research and development, and analysis of the nuclear weapons stockpile be managed in a focused way without specific milestones and performance measures?

Answer. We are doing the "focused way" just as the question implies. As stated in the budget justification, the Campaigns are managed by detailed implementation plans that include specific year-by-year technical milestones and deliverables. The table to which you refer in the budget contains the highest level information from

these plans—the end state for each campaign, and the highest level performance measures for the 5 year period. The Detailed Budget Justification section of the budget cascades to the next lower level of detail in support of those high level performance measures, highlighting each Campaign's Major Technical Elements with associated fiscal year 2001 funding. The specific milestones and performance measures supporting this lower level are not included in the budget document. Rather, they are included in the implementation plans, which we would be happy to make available to the Committees if desired. The measures in the implementation plans are referenced in the Department's Work Authorization system when the programs are executed.

Question. How detailed are the annual Implementation Plans? Explain if, or how personnel performance evaluations are tied to the success of these annual plans?

Answer. The Implementation Plan for Campaigns are primarily documentation of the technical goals and detailed milestones and deliverables for the M&O contractors who execute the Stockpile Stewardship programs. These plans contain the types of milestones which could be utilized by M&O contractors in evaluation of their employees, although the DOE is not directly involved in these efforts. At a higher level, these plans could be enumerated in the performance measures associated with the M&O contracts. Federal managers may also choose to include a reference to a specific Implementation Plan as part of their personnel performance measurement package. We are looking at the potential for all of this throughout our federal structure and M&O contracting.

ABILITY TO MEET MILITARY REQUIREMENTS

Question. The DOD is the military customer for the nuclear stockpile and partners with the DOE to set requirements for the stockpile stewardship program. A significant fraction of the weapons in the stockpile are aging well beyond their design lives. Since we are not producing new weapons, we must begin rebuilding our existing weapons by fiscal year 2006. When we begin rebuilding weapons, we want to be able to make them more safe, reliable, and secure.

The 30-Day Review said "Failure to develop and mature these technologies [to make weapons safer, more reliable, and more secure] during the next 3–5 years could lead to the reuse of 20–30 years old technology in refurbished weapons."

General Gioconda, has the Administration requested a budget that supports the schedule to rebuild weapons and incorporate the latest technologies to make our weapons safer, more reliable and more secure?

Answer. The Administration has requested a budget that strikes an appropriate balance between developing new technologies, incorporating those technologies into the stockpile, and being able to certify that the stockpile is safe, secure, and reliable without a nuclear test. More work in the surety options available for each weapon in the stockpile is being conducted prior to large resource decisions.

CYBER SECURITY

Question. The 30-Day Review identified the special challenge of balancing the implementation of program requirements and new security requirements. It noted a recent study that found secure information environments across the complex were outdated and poorly supported compared to unclassified systems. The 30-Day Review stated, "The study concludes that a robust set of cyber-security related upgrades would cost approximately $850 million over four years to complete. At present, funds are not identified to commence the needed upgrades." What is the Department's plan to upgrade cyber-security throughout the weapons complex?

Answer. Defense Programs, in conjunction with the Chief Information Officer, will convene the Integrated Security Management (ISecM) leadership team to review, update, and attempt to reduce the projected costs of the program described in the October 1999 report. The cyber security standard used for ISecM will be changed from "preeminent" to "national security best practice" based on lessons learned from the intelligence community and DOD, with an emphasis on secure computing operations in the weapons complex. Using the results of this review, analyses of nuclear weapons information assets, and analysis of data flows within the nuclear weapons complex, Defense Programs will develop a revised set of requirements for improved cyber security throughout the weapons complex. Defense Programs will complete the analyses, revise the requirements, and develop a program plan (including anticipated funding requirements) within the next few months.

Question. Why hasn't the Administration requested the $850 million over four years to implement the proposed cyber security upgrades?

Answer. Funds for the Integrated Security Management (ISecM) proposal were not included because the proposal was still being reviewed. The ISecM proposal was

based on "pre-eminent protection against the insider threat" which substantially increase the overall project costs without a corresponding significant increase in protection. Defense Programs in close coordination with the DOE Chief Information Officer has initiated an effort to define a program to improve cyber security in the weapons laboratories using effective, but less stringent, criteria. A detailed program plan and funding requirements will be forthcoming through the DOE Chief Information Officer.

Question. How important is cyber security and what is the appropriate level of funding to address our cyber security vulnerabilities over the next five years?

Answer. Protecting nuclear weapon information against an ever-increasing threat, including increasingly sophisticated insiders is important. Funding requirements will be defined during the planning and design phase of the weapons complex enterprise secure network. In addition to the development and integration costs, the costs of maintaining the integrated enterprise-wide secure computing infrastructure will require a substantial ongoing investment to stay ahead of the evolving threat.

NATIONAL IGNITION FACILITY

Question. NIF has been described by the Department as critical for Stockpile Stewardship. Recently, many reports have surfaced with major concerns regarding schedule and costs for NIF.

General Gioconda, how important is NIF to the success of the Stockpile Stewardship program and maintaining the nuclear deterrent? Will a fully operational NIF be necessary to certify weapons systems in the future?

Answer. NIF is a unique facility and a key element of the Stockpile Stewardship Program because it will allow the experimental study of thermonuclear burn and important regimes of high energy density science, directly related to the primaries and secondaries of modern nuclear weapons. Thermonuclear burn is at the very heart of how our stockpile works. The ability to experimentally study physical phenomenon under these conditions will lead to greater confidence in the US stockpile over the long-term. Although NIF ignition experiments will not test all of the phenomena for the success of nuclear weapons, they will provide a stringent test of the understanding and integration of a significant subset of these phenomena in a way that no other Stockpile Stewardship experiments will be able to do.

NIF supports the SSP in three essential ways: (1) it permits the study of issues which can affect an aging or refurbished stockpile; (2) it permits an advancement of the critical elements of the underlying science of nuclear weapons and thus will play a major role in validation of the advanced simulation codes under development by the Accelerated Strategic Computing Initiative (ASCI) which will form our basis for certification; and, (3) it will attract and help train the exceptional scientific and technical talent required to sustain the SSP over the long term.

Question. The original cost estimate was for $1.1 billion. I keep hearing rumors that the new cost baseline may increase by $500 to $800 million, and that operational costs associated with NIF may double original projections. At what point does NIF get simply too expensive? Must we have NIF at any cost, or is there an alternative path the Committee should consider?

Answer. NIF is a key element of the Stockpile Stewardship program. Several options to complete the NIF have been developed and a new cost and schedule baseline proposal is being prepared. The total additional funding requirement is dependent on which option the Department selects. After reviewing the proposed solutions, the Secretary will be in a position to identify the funding required for the preferred option. At the current time and with the projected state of technology, there are no alternatives to NIF that can produce the physical performance regimes required.

The projected costs to operate NIF have not changed. The one remaining operational cost uncertainty represents a very small element of the total operating cost. It is associated with the ability of the final optics to withstand the high damage levels associated with operating the laser at the required ultraviolet wavelength for the most energetic experiments to be conducted on NIF. The issue is one of economics—how frequently these optics need to be refurbished or replaced. There is a technology program in place to increase the damage tolerance of the optics and their coatings. Highly energetic experiments are not planned until the latter half of this decade and prior to that time, significant experimental mission needs can be satisfied with current technology.

Question. General Gioconda, as the Department prepares a new cost and schedule baseline for NIF, I would also like for you to report to me on alternatives to NIF (within the next 90 to 120 days).

Answer. My scientific advisors tell me there is no alternative technology having the maturity of lasers which can address the requirements of the SSP. Although

current results from pulse power systems based on Z-pinch technology have been impressive, we do not have the scientific knowledge at this point to scale this technology to the temperature and pressure regime needed for the stockpile stewardship mission. The Z-machine will be useful as a complement to NIF, particularly in enhancing weapon effects testing. It is also able to perform a subset of the SSP experiments in hydrodynamics and radiation flow although at conditions further from the nuclear weapons regimes. Z-pinch technology has great potential and could become the means for studying high yield weapons physics, but at this point it is not a credible alternative to NIF.

Question. Would you compare NIF to the similar program in France? Is their machine similar or different? Do their programmatic assumptions correlate to ours? Have they encountered similar troubles?

Answer. The elements of the French Laser Megajoule (LMJ) and the NIF are very similar although the LMJ has 25 percent more beams than NIF. LMJ was originally scheduled to be completed in 2010 but has been accelerated to 2008 because of the urgent needs of the French Stockpile Stewardship Program now that they no longer have a test site. Their programmatic assumptions are similar, using experiments to train the next generation of weapons scientists and to test weapons design codes under conditions of temperature and pressure close to that of a nuclear weapon. Ignition is a central test of this philosophy for the French. The French are currently building an eight beam engineering prototype called the Laser Integration Line (LIL) which will be operational in 2002 and serve as a useful test bed. The French have historically drawn upon their industrial contractors to develop and build their high power laser systems. They are continuing this practice for LIL and LMJ. This is the approach which is now being used for NIF to address the previously unaccounted for complexity of our state-of-the-art system, and cleanliness problems in assembling and installing the laser and target system infrastructure. As a result, assembly and installation of the NIF beampath infrastructure system will now be managed and performed by industrial partners with proven records of constructing similarly complex facilities.

NIF-TECHNOLOGICAL BREAKTHROUGHS STILL NEEDED

Question. Isn't there still significant technological risk associated with NIF, beyond the problems of getting it built?

Answer. The Conceptual Design Report of May 1993, identified six major technological breakthroughs required to make NIF a functional reality meeting all mission performance requirements. During the intervening years, five of these breakthroughs have been demonstrated. These include: (1) a high-gain pre-amplifier module which amplifies and conditions the laser light before it enters the large glass lasers; (2) a servo-controlled deformable mirror which aligns the laser light to very exacting tolerances as it transmits the light to the main amplifiers on multiple passes; (3) a large aperture optical switch which traps the light inside the main amplifier and enables the multi-pass operation; (4) the production of laser glass in a continuous versus batch process thus reducing the cost by a factor of five below that for NIF's predecessor Nova; and, (5) the development and production of large frequency conversion crystals which are grown in a couple months as compared to two years for those used on Nova. The one remaining challenge is the demonstration of long-life optics that can withstand the high damage levels associated with operating the laser at the required ultraviolet wavelength. The issue is one of economics, namely, how frequently the final optics in the system need to be refurbished or replaced. With current technology, the optics lifetime goal can be achieved with as much as 60 percent of the maximum desired energy. To achieve the full goal, a technology program is in place to increase the damage tolerance of the optics and coatings needed for the most energetic experiments to be conducted on NIF, which will not be conducted until the latter half of this decade.

Question. Isn't it true that in order for NIF to get the laser energy levels required for ignition, it must have major breakthroughs in performance?

Answer. No major breakthroughs are required to demonstrate the energy levels needed for ignition. The objective of the technology development program described in the previous question is to reduce the cost of operating NIF at full energy. In addition, there have been recent advances in target physics and fabrication which while not completely tested and reviewed, increase the confidence in achieving ignition with 192 beams.

Question. Isn't it true that there still exist major technological issues with the Final Optical Assembly design?

Answer. There are no technological issues with the Final Optics Assembly design. During system engineering evaluation of the design, an error was uncovered and re-

sulted in the need to redesign the assembly. This component is not on the project's critical path schedule and there is time to correct the design prior to release for bid.

NIF—SEAB CONCLUSION

Question. General Gioconda, in your written testimony about NIF, you refer to the Secretary of Energy Advisory Board's conclusion that,

> The Task Force has not uncovered any technical or managerial obstacles that would, in principle, prevent the completion of the NIF laser system. Nevertheless, serious challenges and hurdles remain. The NIF task force believes, however, that with appropriate corrective actions, a strong management team, additional funds, an extension of the schedule and recognition that NIF is, at its core, a research and development project, the NIF laser system can be completed.

Their conclusion is filled almost completely with disclaimers. It seems to promise only an open-ended R&D effort with continual cost overruns, schedule delays and technological hurdles. Do you draw any encouragement at all from such a statement?

Answer. The SEAB Task Force's Interim Report provided seven detailed findings and associated recommendations, all of which are now being acted upon. In one key recommendation, the SEAB urged the NIF team to clarify the roles and lines of authority of NIF management; to implement an external project management review process; and, to strengthen the management team at Lawrence Livermore National Laboratory. The NIF Project and Lawrence Laboratory have streamlined reporting relationships and implemented a reorganization to establish clear authority and accountability in the project. The NIF Project has a new Associate Director for NIF Programs, George Miller, who reports directly to LLNL Director Bruce Tarter. In addition, a new project manager, Ed Moses has been assigned to the project.

The Project is also using industry to its fullest, contracting to industry essentially all fabrication, assembly and installation tasks and maintaining only those tasks that are a unique capability of Lawrence Livermore National Laboratory. One of the highest sources of cost growth for NIF has been the clean assembly of the laser system. Originally the assembly of the laser system was envisioned to use in-house labor, but this task has now been identified to be too complicated and difficult to be managed and executed by Livermore. The project has worked with industrial experts from fields such as aerospace and semiconductor plant construction, to develop both a construction method and a contracting strategy for laser assembly that is in the process of being executed. This is a significant step on the path to getting NIF back on track.

In aggregate, the Task Force's report provides a great deal of confidence that we understand the issues with NIF. We expect to have a path forward that will ensure the success of the project within the new cost and schedule baseline currently being developed by the Secretary of Energy for presentation to Congress by the June 1, 2000 deadline. My confidence is in the issues identified and solution set promulgated at this point I will continue to gage the program success with a host of milestones and will expect the program and project to excel.

TRITIUM—APT FUNDING

Question. When the Secretary selected reactor production of tritium as the preferred option for maintaining our stockpile, he stated in the Record of Decision the importance of keeping accelerator-based production in the APT program as a viable backup.

Furthermore, Sec. 3134 of last year's Defense Authorization Act required the Department to complete engineering development and preliminary design of the APT as a back-up source to the reactor.

The President's budget provided only $19 million for APT, rather than the $84 million that is required to complete the design work on schedule.

Why has the Department chosen to ignore the clear statutory requirement to fund APT through design?

Answer. The Department has not chosen to ignore the statutory requirement to fund the APT through completion of design. In fiscal year 2000, the APT project has been funded and developmental and preliminary design work is proceeding. However, the Department made clear in its budget submission that there is not sufficient funds in fiscal year 2001 to support both its basic stockpile obligations and continue as originally planned the backup program for tritium production. Given the success of the Commercial Light Water Reactor for the production of tritium to date, the Department has focused available funding on meeting basic stockpile obliga-

tions. The Department will continue the APT project with available resources in fiscal year 2001 as a back up for tritium production, though it must suspend the design effort and replan development to reflect funding realities.

The Department is pursuing as an alternative approach a joint program for Advanced Accelerator Applications to include transmutation of waste, tritium production, and other efforts. Such a program is supported by both Defense Programs and the Office of Nuclear Energy. A DP/NE working group is developing the joint program concept. The Department remains committed to a back up tritium production program but must do so within the boundaries of available balanced resources and good management for the overall Stockpile Stewardship Program.

TRITIUM-STATUS OF REACTOR DECISION

Question. On January 28, the GAO issued their report on "Challenges Remain for Successful Implementation of DOE's Tritium Supply Decision." The GAO report notes:

> "DOE's current approach for developing the accelerator introduces cost and schedule risks that threaten the accelerator's availability as a tritium production backup option as originally intended."
>
> "This report recommends that the Secretary of Energy reassess the Department's current approach for the backup accelerator."

General Gioconda, please update the Committee on the status of the commercial light water reactor for the production of tritium?

Answer. The commercial light water reactor (CLWR) project is working to achieve two major milestones: (1) to begin producing new tritium in Tennessee Valley Authority (TVA) reactors in October 2003, and (2) to begin extracting the tritium in the new Tritium Extraction Facility (TEF) being constructed at the Savannah River Site (SRS) in February 2006. As discussed below, the project is making progress as planned to meet these milestones.

DOE plans to use TVA's Watts Bar Unit 1, Sequoyah Unit 1, and Sequoyah Unit 2 reactors for tritium production, with Watts Bar being the first. To do this, work is being done in three major areas. TVA is preparing the analyses and reports needed to request the Nuclear Regulatory Commission (NRC) to amend the operating licenses of the three reactors to permit them to irradiate DOE-designed, tritium-producing rods. TVA is working under the DOE–TVA interagency agreement that went into effect on January 1, 2000. These license amendment requests are scheduled to be submitted to the NRC at the end of January 2001. NRC has previously committed to an expeditious review of the license amendment requests. Since the first insertion of tritium rods will not occur until the fall of 2003 (they must actually be on site at Watts Bar in August 2003), the schedule leaves more than adequate time for the NRC to complete its review and approve the license amendments.

With respect to tritium rod fabrication activities, DOE is in the process of procuring commercial services for the fabrication of tritium-producing rod components and for commercial services to assemble the components into complete rods. The procurement process for rod components is well underway, and several contracts have already been signed. With respect to acquiring the services of a fabricator for production-scale manufacture of the tritium rods, proposals have been received and are presently being evaluated. The selection of a commercial fabricator is expected within the next several weeks.

Site preparation for the Tritium Extraction Facility has begun, and groundbreaking is scheduled for July 2000. Detailed design of the facility is continuing. Procurement of long-lead major equipment items is underway.

Question. Do any significant hurdles remain that could prevent the NNSA from producing tritium on the proposed schedule, such as technical issues, regulatory approval, etc.?

Answer. There are no significant hurdles that will prevent the NNSA from producing tritium although there are still a number of actions that must be completed. Laboratory tests and post-irradiation examinations continue to confirm that the technology is sound.

The regulatory process is expected to yield reactor license amendments in advance of when they are needed. Since the first insertion of tritium rods will not occur until the fall of 2003 (they must actually be on site at Watts Bar in August 2003), the schedule leaves more than adequate time for the NRC to complete its review and approve the license amendments. It is important to emphasize, in this regard, that the NRC has already conducted three technical reviews of the technical and safety issues associated with the use of the tritium rods, and all generic issues associated with their use have been resolved. The only remaining items are the reactor-specific

items that will be the subject of TVA's license amendment requests next year. In addition, the NRC has previously committed to the expeditious review of the amendment requests.

We are on track to construct and start up the Tritium Extraction Facility by February 2006, but the schedule has very little float in it because of prior-year constraints. To complete the facility on time, the Department must continue to carefully manage all aspects of the project.

Question. Explain DOE's reasoning for terminating design work on the APT plant. DOE obviously believes that there in very little risk with the CLWR approach and is, therefore, willing not to comply with Congressional direction to complete the APT plant design. What is your response General Gioconda?

Answer. Faced with funding constraints in fiscal year 2001 and unable to support both our primary stockpile obligations and the backup tritium production source as planned, Defense Programs prioritized in favor of meeting basic stockpile needs. The success to date of the CLWR program was certainly a factor in deciding where scarce funds should be allocated.

It should be understood, however, that the APT project is fully funded for fiscal year 2000 and will be continued with available funding in fiscal year 2001. In addition, the Department is pursuing a joint program for Advanced Accelerator Applications to include transmutation of waste, a backup tritium capability, and other potential efforts as an alternative approach to ensuring a backup capability for tritium production. We are working with the Office of Nuclear Energy to define such a program.

The Department remains committed to a backup tritium production program but must do so within the boundaries of available balanced resources and good management.

Question. What is the status of the plant design? What is the cost and schedule to complete the design?

Answer. The APT plant preliminary design is on schedule and on budget. A recent Independent Cost Estimate was in agreement with the project estimates, to within 3 percent. By the end of fiscal year 2000, the preliminary design will be approximately 66 percent complete. The Baseline Change, approved last June, included $38 million for design in fiscal year 2001, and $19 million in fiscal year 2002 or a total of $57 million to complete preliminary design and essential elements of final design by the end of fiscal year 2002.

Question. How long would it take to reassemble the design team once the design effort is terminated?

Answer. Assuming that the current design team was entirely terminated, it is estimated that reassembly of the team, including contracting and staffing up, would take approximately 12–18 months. If the proposed joint accelerator program were fully funded, it is anticipated that the APT design team would be retained to complete work on design and upgrade of the Low Energy Demonstration Accelerator prototype for that program. If the proposed joint program were initiated but not fully funded, it is expected that the design contract would be retained, with some portion of the design team. In that event, reassembly of the APT design team could be accelerated, requiring only 6–12 months for staffing up.

COMBINING ACCELERATOR PRODUCTION OF TRITIUM (APT) AND ACCELERATOR TRANSMUTATION OF WASTE (ATW)

Question. I understand that there may be opportunities for synergies in an advanced accelerator program that would help maintain APT as a viable backup to reactor-based production of tritium, while at the same time allow the Department to continue important research into Accelerator Transmutation of Waste (ATW).

I understand that both APT and ATW use the same accelerator design. Such an accelerator could also provide the nation's supply of medical radioisotopes with a small fraction of its total beam.

General Gioconda, you and others have indicated that there are several options under discussion for an integrated program, probably at around $70 Million in the first year. This strikes me as a good way to address two national issues, tritium and nuclear waste. Unfortunately, the budget zeroed out all funding for the ATW program.

Would a program such as this that integrated several applications of advanced accelerators be of interest to the NNSA?

Answer. Yes, such a program would be of interest to the NNSA. It could provide not only a backup capability for tritium production, but a source for other defense-related isotopes, demonstration of a potential means for transmutation of defense waste, development of defense-related technologies, and development of an impor-

tant nuclear technology, all of which are important to national security. The current APT accelerator design can, indeed, be used for such a program.

Defense Programs believes that there is a real opportunity for synergy in a joint program that could spur development of accelerator technology, providing a facility capable of demonstrating transmutation of waste, isotope production, and production of tritium—all of which are of interest to the NNSA. As stated earlier, we are working with the Office of Nuclear Energy to define such a program.

INFRASTRUCTURE AT THE LABS AND PLANTS

Question. DOE has failed to keep good modern facilities. In fact, where the industry and DOD have a historic reinvestment rate of 2–4 percent, DOE has historically reinvested in its facilities at a rate of 0.8 percent.

The 30-Day Report said this has "resulted in a huge bow wave of deferred improvements. For example, 70 percent of the facilities at Y–12, 80 percent of the facilities at the Kansas City Plant, 40 percent of the facilities at the Pantex Plant, and 40 percent of the facilities at the Savannah River tritium facilities are more than 40 years old." For example, "before the B–61 and W–76 SLEP refurbishments can be completed, it may be necessary to reestablish material formulation and fabrication capabilities for critical weapons components."

General Gioconda, what is the Department's plan to address the crumbling infrastructure in the weapons complex?

Answer. Despite our ambitious efforts over the past few years to simultaneously downsize and modernize the weapons complex infrastructure, we have fallen behind the pace of degradation of our facilities. Even aided by additional funding provided by the Congress for use at the production plants, the infrastructure issues are so pervasive that one of the recommendations of the recent 30 Day Review advocated immediate corrective action. Consequently, we are requesting supplemental funding for infrastructure needs in fiscal year 2000. In addition, we have recently commissioned comprehensive internal and independent assessments of our recapitalization needs in response to the recommendation. When that information is integrated into the Stockpile Stewardship Program, we will bring it forward to the Congress.

Question. How much money is needed over how many years?

Answer. I am not in a position to speculate on this until the comprehensive independent assessment is complete, but any additional resources applied here will be put to immediate use. It is my hope that we can present a responsible, achievable, multi-year recapitalization initiative with the fiscal year 2002 budget request.

Question. What is the impact on the weapons refurbishment schedule if the facilities are not improved and restarted?

Answer. Our present stockpile refurbishment planning requires former capabilities be reestablished, new capabilities added, and existing capacities expanded. Without the following investments, currently planned refurbishments will have to be rethought and rescheduled. These investments include: A new Highly Enriched Uranium Materials Facility and a new Special Materials Complex are needed to support the secondary manufacturing capability at Y–12 Plant. The production capacity at Sandia National Laboratories, New Mexico, for neutron generators must be expanded to provide sufficient quantities to refurbish the stockpile. At the Savannah River Site, the Acorn gas transfer system production capacity must be expanded to provide other production lines to support scheduled refurbishments. Also, at Los Alamos National Laboratory, the detonator facility capacity must be expanded to support neutron generator production. In all of these facility efforts we have attempted to strike a balance between production, maintaining the infrastructure, assuring the availability of critical skills, and security, while ensuring the safety of our workers. Each year we must in an integrated, measured way improve our infrastructure for the long haul.

Question. Has the Department ever considered 3rd party financing arrangements for infrastructure such as the ones DOD has experimented with?

Answer. To my knowledge, the Department has not formally considered 3rd party financing arrangements for infrastructure. Although Los Alamos National Laboratory has an extensive background in 3rd party financing for major telecommunications and supercomputer acquisitions, there is no precedent in the Department of Energy complex for 3rd party financing of construction projects on government owned land.

RECAPITALIZATION OF PRODUCTION PLANTS

Question. The budget request includes about $60 million to continue the Stockpile Management Restructuring Initiative (SMRI) projects to resize the production plants consistent with planned workload levels. Of the $60 million, nearly $24 mil-

lion is for the Kansas City Plant and $31 million is for the Savannah River Plant. This leaves only $5 million for the Pantex Plant.

How do you explain this apparent imbalance? What factors, other than resource constraints, were considered in arriving at this allocation of funding for fiscal year 2001?

Answer. The scope of each of the Stockpile Manufacturing Restructuring Initiative (SMRI) projects reflects the amount of infrastructure restructuring that could be done that could provide cost effective operational efficiencies. Each of the projects underwent thorough reviews by Defense Programs and by independent external reviewers. Based on these reviews, we ended up with a fairly wide range of projects. At one extreme is the Kansas City Plant, where we are radically reducing our footprint at a total estimated cost of about $122 million. At the other extreme is the Pantex Plant where the reviews determined that only about $13 million in reconfiguring was necessary to support anticipated workloads.

Question. The industry standard for infrastructure replacement is 3–5 percent of the replacement value. What is the replacement value of each of the production plants and how does your fiscal year 2001 budget request compare to the 3–5 percent industry standard?

Answer. The replacement values for the Pantex and Kansas City Plants are $5.1 and $1.2 billion respectively. The replacement values for the DP owned portions of the Y–12 Plant and Savannah River Site are $1.7 billion and $713 million respectively. The infrastructure replacement investment for these plants included in the fiscal year 2001 budget request is about 2 percent of their total replacement value. I recognize these investments fall short of industry standards and have recently commissioned a comprehensive assessment of our recapitalization needs in response to the 30-Day Study recommendation.

Question. Does DOE have a detailed plan for recapitalizing the production plants and facilities at the national labs?

Answer. In my view we do not yet have enough detail for proper future planning in an integrated fashion. That is why we are doing the comprehensive assessment mentioned previously.

Question. What are OMB's 5-year budget projections for each of the production plants and national labs for infrastructure replacement?

Answer. OMB does not provide specific site by site outyear projections. The five year funding projection for Weapons Activities that accompanies the fiscal year 2001 Congressional Budget Request was provided by OMB and grows from $4.594 billions in fiscal year 2001 to $4.870 by the end of the five year period.

STRATEGIC ARMS REDUCTION TREATY (START)

Question. The budget request for several years, including fiscal year 2001, has been based on a "lead-hedge" nuclear weapons policy established by President Clinton in 1995 or 1996. Under that policy, DOE is required to maintain facilities and capability to support a stockpile inventory of 6,000 weapons under START II, with the ability to return to START I levels of around 9,000 weapons.

Could you explain this policy and how requirements, both budgetary and production support could change under START II or START III?

Answer. The "lead-hedge" nuclear weapons policy is designed to lead the Russians into a START II regime, while at the same time maintaining our ability to return to START I levels should the situation warrant. The impact of a possible START III agreement on budget and production support cannot be determined with any degree of accuracy at this time. The result would be highly dependent on the numbers and types of nuclear weapons as well as the agreed upon schedule for stockpile reductions and transparency measures.

Question. How does maintaining the capability to produce several thousand weapons above START II or an assumed START III level of 2,500 weapons, aid overall non-proliferation and weapons reduction goals?

Answer. Regardless of the size of our nation's stockpile, to ensure the safety and reliability of that stockpile requires maintaining a production capability to replace parts as necessary as the stockpile ages. It is our safe and reliable stockpile that supports non-proliferation by providing our allies a nuclear umbrella which reduces their incentive to develop a nuclear stockpile of their own and that support reduction goals by allowing us to negotiate from a position of strength.

Question. How does START III enter into DOE's current strategic planning? Can we afford to refurbish warheads which would be discarded in a short period of time if START III is ratified?

Answer. START III is one of the scenarios that DOE considers in its strategic planning. As START III takes shape, so will our plans. Until more is known, we

will continue our plans to refurbish the directed stockpile as contained in the President's Nuclear Stockpile Memorandum.

Question. Ms. Gottemoeller, unlike START I and START II, is it likely that a START III will restrict the size of an inactive warhead reserve?

Answer. At this point, the United States is involved in discussions with Russia about the framework for START III and formal negotiations have not commenced. A final decision has not been made about the central limits for deployed warheads or the composition of U.S. strategic forces. As a consequence, it is premature to address the question of how to treat an inactive warhead reserve.

Question. General Gioconda, how does the annual funding need change based on a START I, START II or START III assumption? Is there a significant reduction in funding requirement if planning to meet a START III stockpile level of 2,000–2,500 weapons?

Answer. Current policy regarding START II requires a hedge to return to a START I stockpile thus making essentially no difference between them for DOE resource and management activities. START III discussions have not matured to a point that enables a detailed assessment of funding impacts. The impact would depend on the timing, specific weapons involved, and policies about an inactive reserve.

Question. General Gioconda, how would planning and funding change under a START III level of 2,500 weapons with an upward hedge of 50 percent?

Answer. The approach to planning for a START III level of 2,500 weapons with an upward hedge of 50 percent would be very similar to the approach we take now. The biggest difference most likely would be in the planning associated with a potentially more limited mix of weapon types in the stockpile. The complex required to support the stockpile and the associated funding would be dependent on the specific composition of the active and inactive stockpile and the time required to reactivate warheads linked to specific weapon systems DOD requests.

The budget request for several years, including fiscal year 2001, has been based on a "lead-hedge" nuclear weapons policy established by President Clinton in 1995 or 1996. Under that policy, DOE is required to maintain facilities and capability to support a stockpile inventory of 6,000 weapons under START II, with the ability to return to START I levels of around 9,000 weapons.

Question. Ms. Gottemoeller, what is the current status and schedule for finalizing START III?

Answer. The United States and Russia are currently engaged in discussions on the provisions that would be appropriate for inclusion in a START III Treaty and for an Amendment to the ABM Treaty to permit a U.S. National Missile Defense System. These discussions involve the explanation and clarification of potential treaty elements, but they do not involve the negotiation of specific provisions for either START III or the ABM Treaty. Now that the Russian Duma has ratified the START II Treaty, the United States and Russia will make a decision on how to proceed with START III Treaty negotiations. However, a schedule for finalizing START III and ABM Treaty Amendments has not been developed.

DUAL REVALIDATION OF WEAPONS SYSTEMS

Question. The concept of dual revalidation, that is having a second independent check by the national weapons design lab that did not design the particular weapon, has been the guiding concept for the life extension review program in DOE. The Nuclear Weapons Council approved this concept in 1996 to insure a critical, impartial assessment of design and performance issues.

Am I correct that the fiscal year 2001 budget backs away from that concept? If so, why is this change being made?

Answer. The fiscal year 2001 budget includes funding for the baselining program. The Nuclear Weapons Council approved dual-revalidation only for the W76. Baselining efforts will capitalize on robust experimental, simulation, and production activities as described in the Department's high level plan: Directed Stockpile Work Program Plan, Campaign Plans, and Readiness in Technical Base and Facilities Plan. Additionally, the baselining efforts will incorporate peer review to maintain the strictest standards of intellectual oversight. It is the Department's judgement that a properly executed baselining program will achieve the initial goals of the dual revalidation program earlier while capitalizing on existing nuclear weapons complex programs, better utilizing the limited resources under our stewardship.

The W76 Dual Revalidation effort began in 1996 and was completed in December 1999 with significant cost in time, money, and scientific manpower. Although the nuclear weapons complex greatly benefited from the experience gained in the dual revalidation program, it was determined that the Department must streamline

these efforts to complete the task of studying the entire nuclear stockpile within an acceptable period of time. The baselining program will document our current understanding of engineering models, simulation tools, data, and other information critical to understand the certification basis for each warhead along with an analysis of their quality and sufficiency. This information will form the basis upon which future weapons research will be focused and will provide tools for future assessment and certification activities. Additionally, the baselining program will capture institutional expertise from our "gray beards" with underground nuclear test experience before the majority of them retire over the next five years. The baselining program begins in fiscal year 2000 with baselining efforts on the W80 warhead and continues for the next four years, baselining two warheads each year until complete.

If after baselining all weapons, we find areas to focus dual revalidation efforts in a focused manner with expected milestones we will use our baselining result as the starting point of the revalidation.

Question. How will an impartial, critical peer assessment from the designing lab be possible?

Answer. Baselining activities are planned to include an integral peer-review element in each technical area. This peer-review process has been successfully employed at the respective labs for years and will continue to be a crucial element of all Department design laboratory plans.

Question. I understand that the new Campaign concept being proposed in this budget is what DOE now believes will better identify and address the life extension issues of the remaining weapons systems in the stockpile. Yet the Campaign approach appears to address development of scientific and technical tools and does not focus on critical design and operational issues. Do you share my concerns?

Answer. I am very confident that our new business model containing Direct Stockpile Work (DSW), Campaigns, and Readiness in Technical Base and Facilities (RTBF) is addressing all the areas that you discussed. Together, these three high-level plans completely address and properly focus the requirements of the Stockpile Stewardship Plan.

For example, the DSW Program clearly defines the scope and schedule of planned weapon refurbishment activities. Based upon this information, the supporting production and engineering campaigns align their deliverables with the requirements of the DSW plan while RTBF infrastructure needs are similarly aligned. In parallel with these efforts, the science campaigns continue to improve their fundamental science efforts to impact and enable the certification requirements of these refurbished warheads. Together, this business model maintains focus on the stockpile while supporting necessary scientific efforts that provide high confidence in the safety, reliability, and performance of our nuclear arsenal.

Question. What is the justification for moving away from a rigorous, in depth peer analysis to an accelerated baseline formulation proposed in the fiscal year 2001 budget?

Answer. As stated previously, baselining will achieve the initial goals of the dual revalidation program but is a more streamlined effort which allow the entire stockpile to be studied in a more acceptable time frame and with less resources. Peer review will still play an integral role in the baselining process. Once the stockpile is properly baselined we can then in focused, accountable fashion call for dual revalidation efforts in gray or shortfall areas as they emerge in the baseline analysis.

SAFETY

Question. Recently, a safety engineer from within Defense Programs wrote a harsh 29 page report called the The Safety Basis Debacle, in which he alleges safety requirements at Pantex and other sites are routinely ignored and institutionally discouraged. Among other things, he wrote:

> The pattern of stylized and ineffectual safety analysis, of accident precursors unheeded, and of management complacency is strongly reminiscent of the Nuclear Regulatory Commission before the accident at Three-Mile Island or NASA before the Challenger disaster.

General Gioconda, are you aware of the report and how serious are the allegations?

Answer. We in Defense Programs take safety very seriously. I, along with my senior managers, have read the report in detail and have received extensive briefings by the author. The issues raised in the report have prompted further review by Defense Programs; the Office of Environment, Safety, and Health; the Inspector General; and consultation with the Defense Nuclear Facilities Safety Board. This review and analysis, aimed at what actions are necessary responses to keep Defense Pro-

grams safety center-stage, is on-going and will be forwarded to the Congress once finalized.

Question. How will the NNSA respond to the issues raised in the report?

Answer. I have asked the writer to provide me with recommendations to improve the safety requirement processes and to sharpen his focus to what can be done to address the issues he raises. This would include a clear process to ensure all safety issues are raised and appropriately addressed. I have also asked the plants and laboratories, headquarter elements and the Defense Nuclear Facilities Safety Board to respond along the same lines to develop an integrated action plan as necessary. I will be working with my staff at Headquarters and in the field to implement recommendations that come out of the reviews.

CRITICAL SKILLS

Question. The Chiles report, the 30-Day Review and other reports continue to identify critical skills as a major problem for the weapons complex.

What have you proposed in this budget request to address the ongoing problem of recruiting and retaining the critical technical and scientific workforce needed to support and maintain over the long term a safe and reliable nuclear weapons stockpile in the absence of underground nuclear testing?

Answer. For the Federal workforce, we have proposed $3.6M for our Scientific Retention and Recruitment Initiative. This will enable the recruitment and retention of experienced scientists and related support staff in areas of emerging importance to the science mission. Funds will also be used to motivate and retain highly skilled top performing technical managers.

In regard to the contractor work forces, we have attempted to stabilize the employment situation in the last few years following a multi-year period of recurring downsizing and work force restructuring at most of our sites. Recognizing budget constraints, we have relied on attrition to create the "headroom" necessary in our work forces to pursue recruitment strategies to replenish existing critical skills and develop the necessary skill base for new requirements. We have not proposed any specific additional activities in this budget for the contractor workforce; however, we have been working with all of our contractors on their work force plans aimed at ensuring the availability of required technical and scientific skills through effective recruitment and retention measures.

Pursuant to section 3163 of the National Defense Authorization Act for fiscal year 2000, the Department will submit a joint DOE/DOD plan to Congress addressing various issues related to the Chiles report. The report will discuss the current situation at each contractor site, outlines measures necessary to retain required nuclear weapons expertise, and identifies resource requirements.

PIT PRODUCTION

Question. NNSA continues to work to reestablish plutonium pit manufacturing at Los Alamos to replace pits destructively tested in the surveillance program and to replace pits in the future should surveillance indicate a problem. This capability is central to the weapons complex of the future. The 30-Day Review identified the challenge to build new, certifiable weapons primary pits, using new tools and processes in a new environment, and stated, "Presently, the U.S. is the only nuclear power that lacks the ability to manufacture pits."

General Gioconda, please update the committee on NNSA's efforts to reestablish pit production at Los Alamos?

Answer. Since we initiated the reestablishment of pit manufacturing, we have put in place at Los Alamos several critical pieces of equipment necessary to manufacture pits, completed the plans with agreements between designers and manufacturing personnel for qualifying all the processes necessary to manufacture war reserve W88 pits for the stockpile, and manufactured five development pits in preparation for the manufacture of pits necessary to qualify the production processes through physics and engineering testing.

Question. Have you been able to produce a certifiable pit? What problems or issues remain to be resolved in order to achieve certification? Will you meet the requirement for W–88 pit production by the end of fiscal year 2001?

Answer. We have not yet manufactured a certifiable pit, however we have produced five developmental pits. One of the important elements we are currently working on and is necessary before a certifiable pit is manufactured is to have, in place, the quality controls and manufacturing organization and infrastructure necessary to ensure, through documentation, data gathering and analysis, and procedural controls that the design requirements have been met and that there is consistency in manufacture of the pit. Beyond this, the pits must be certified through a

number of physics and engineering testing. These tests will provide assurance that the pits manufactured will meet the environments expected to be encountered in the stockpile and that the manufacturing differences between LANL and Rocky Flats have not introduced unacceptable physical behavior, which would affect performance of the pit. We are currently planning to have manufactured pits for qualification and complete the physics and engineering testing sufficient for pits to enter the stockpile by the end of fiscal year 2004.

Question. Does the fiscal year 2001 budget request fully support the production schedule? If not, please explain.

Answer. We are pursuing options in fiscal year 2000 to provide additional funding to LANL to reduce the risks in achieving program objectives in fiscal year 2001. It is important, however, to understand that the funds requested under pit readiness rely upon a base capability funded under direct stockpile support and facility infrastructure. Successful implementation of the Pit Readiness Program within any 1 year is dependent upon the total funding received by the laboratories in support of the Stockpile Stewardship Program.

Question. Isn't it true that the budget request does not support a schedule to achieve annual production capacity of 20 pits by 2007?

Answer. Defense Programs is currently reevaluating the manufacturing equipment and facility infrastructure upgrades requirements for reestablishing an interim pit manufacturing capability of nominally 20 pits per year by 2007. This is being done to assure near-term requirements to support the stockpile will be met and that funding for the interim manufacturing capability is appropriate with any planning for a pit manufacturing facility to support the stockpile for the long term. The funding requested in the fiscal year 2001 budget request is in keeping with this objective. Results of this reevaluation will be incorporated within the fiscal year 2002 budget request.

PIT PRODUCTION NEW DESIGNS OR REMANUFACTURED?

Question. There have been several stories in New Mexico lately regarding language in DOE Budget documents about manufacture of new weapon pits at Los Alamos. Several DOE spokesman have since stated that the budget documents were in error and there is no intent to manufacture newly-designed pits.

For the record, can you clarify the types of weapon pits that would be manufactured at Los Alamos in the next few years?

Answer. For the next few years, Los Alamos will be focused solely on the manufacture of the W88 pit to support the stockpile. There will be some work on developing manufacture processes for the W87 and B61–7 in order to demonstrate that the technologies to remanufacture the pits found in the enduring stockpile have been recaptured.

Question. Are they really "newly-designed weapons" or "re-manufacture of existing designs"?

Answer. The work being accomplished on the manufacture of the W88 and manufacture process development of the W87 and B61–7 is associated with the remanufacture of existing designs. We have no requirement for pits in the stockpile other than to replace the one W88 pit we destructively test each year and for which there is a shortfall of spares caused by the closure of the Rocky Flats Plant during the production of W88. We are on a course to do just that.

ACCELERATED STRATEGIC COMPUTING INITIATIVE (ASCI)

Funding of the Accelerated Strategic Computing Initiative has ramped up very rapidly. Large new computers are in place at each Lab now.

I've heard impressive figures for peak computing speeds from these machines. But I've also heard serious concerns that the labs have not demonstrated sustained performance at levels more than a few percent of the peak speeds.

Question. What percent of peak speeds are currently being achieved in the ASCI program with the existing large machines?

Answer. Percentage of peak processor speed on various ASCI computer programs currently range from about 3 percent to about 50 percent. This range is exactly as expected and planned from the beginning of the ASCI program. The range is a function of the maturity of the computer programs and the method of solution (algorithm) required by the problem being solved.

While processor utilization is one useful measure of computer use efficiency, it does not give the full picture in that some algorithms require extensive logical and data transfer operations for problem solution. In those cases, the processor units must wait for data transfer operations to complete before they can continue processing, resulting in lower percentage of peak speeds being attained by such algo-

rithms. Low percentage of peak speed in such cases absolutely does not imply that the machine is being poorly used. It simply means that particular algorithm for the problem solution required by the Stockpile Stewardship program requires the supercomputer level data transfer capabilities of the ASCI machine in different proportion than other algorithms used by the ASCI program. As has always been the case with new supercomputer architectures, the initial efficiencies of our new parallel applications will improve significantly as the computer programs are optimized for production.

Question. Is the ASCI program moving too rapidly to acquire new impressive hardware before waiting for the software programming tools to develop to enable full utilization of the machines?

Answer. No. It has always been the case in the supercomputing environment that the hardware exists before and always drives development of the software. The software will not be developed until the hardware exists that demands its development. This was true for the Cray supercomputer delivered in 1976 with virtually no software and will likely always be true of new supercomputing architectures.

The programming tools needed for full utilization of the hardware are being made available on a planned timetable that is directly tied to the application mileposts for ASCI. The delivery of these tools, with appropriate mileposts, has been planned through the achievement of initial capability for three-dimensional high-fidelity-physics full nuclear weapons simulations in 2004. The ASCI Program is on track and is meeting mileposts required by the Stockpile Stewardship Program.

LABORATORY DIRECTED RESEARCH & DEVELOPMENT (LDRD)

Question. LDRD was held to 4 percent in the Conference Report impacting the current fiscal year. As I've visited at the Laboratories, I find that this cut in LDRD is having very severe consequences.

LDRD investments have a proven track record of high returns to the taxpayer. In addition to significant contributions to mission relevant areas, these funds account for over 30 percent of the new knowledge, as measured by publications, at a laboratory like Los Alamos. There's no question that LDRD investments help attract the high-caliber staff required to meet the challenges of nuclear-weapons science and engineering.

I appreciate that your budget for fiscal year 2001 restores the LDRD funding back up to 6 percent.

Do you concur that the weapons programs have benefitted very significantly through the LDRD program and the funding should be restored to at least 6 per cent?

Answer. We most definitely concur that the weapons programs have benefitted significantly from LDRD investments and that LDRD funding should be restored to at least the 6 percent level. This opinion is also stated in the President's Budget for fiscal year 2001; the DOE Stockpile Stewardship Program Review, dated 11/23/99, (also called 30-Day Study); and the Laboratory Operations Board's recent report (1/00) on LDRD. The three DOE DP Laboratory Directors and the Secretary of Energy unanimously support restoration to a six percent LDRD program.

Question. What impact has the 4 percent limitation had on your ability to meet critical Stockpile Stewardship Program goals? Please be specific.

Answer. The impact of reducing the allocation from 6 percent to 4 percent has been serious, and this negative impact will continue unless adequate funding is restored. Reductions in LDRD are resulting in lost knowledge and capabilities to meet future national defense needs. The LDRD Program cut caused numerous cancellations of fiscal year 2000 weapons-related research and the scaling back of many other projects, thus reducing the breadth and depth of fundamental and exploratory science.

The LDRD fiscal year 2000 funding cut has been creating an environment of uncertainty about future funding for science that has negatively affected morale. This uncertainty, coupled with constrained Program budgets, has had a noticeable impact on the ability of the national laboratories to attract and retain the needed scientific talent.

The following is a sample list of specific curtailed or eliminated projects illustrating the connections to the weapons program:

—Research and Development for Future Proton Applications
—Application of Multi-scale Science to Weapons Issues in Fluids and Materials
—Next Generation Sophistication in High Energy Density Physics
—Nano-Structure High Explosives Using Sol-Gel Chemistry
—Chemical Reactions at Actinide Surfaces: Implications for Nuclear Material Aging and Safety

—RadSensor: Optical Dielectric-Modulation Sensing of Ionizing Radiation
—Atomic Resolution Probes of Strategic Materials

Question. A criticism has been that there is far too much freedom and flexibility under LDRD which allows the work to get far afield of stockpile requirements. Do you believe this to be valid? Is it realistic to confine LDRD to stockpile related work only?

Answer. We do not consider this a valid criticism today. DOE and the laboratories carefully manage the LDRD program to ensure support of their mission areas with a particular emphasis on national security. LDRD proposals undergo rigorous peer reviews to ensure technical excellence, and formidable management reviews to guarantee strategic alignment with the long-term goals of DOE and the laboratories. Additionally, DOE HQ and field offices oversee and concur on all LDRD projects prior to funding and an annual report on LDRD projects is provided to Congress.

The national security programs at the laboratories provide about 70 percent of the LDRD funds, yet they receive over 95 percent support from the LDRD projects. This is due to the synergistic nature of the R&D pursued under LDRD. Confining LDRD to only stockpile work would unnecessarily restrict the innovative impact of the program by stifling the creativity of the scientists and engineers. The multi-disciplinary nature of the Labs is generally beneficial because various DOE missions draw on related science and technology. Mission-oriented, LDRD-supported basic and applied research almost always provides science and technology to more than one mission. LDRD helps develop and maintain first-class scientific and engineering capabilities in all laboratory competencies.

Question. Historically, what portion of LDRD funding has been for direct stockpile work and how much has gone to other activities that are not directly related to stockpile needs?

Answer. Consistent with statutory authority and Department policy, LDRD funds cannot be used to support direct stockpile work. LDRD supports fundamental R&D efforts that are high-risk. If proved viable, the results are then incorporated in the stockpile efforts of the laboratories. All LDRD projects at the national laboratories support DOE and laboratory missions. The Stockpile Stewardship Program provides just over 50 percent of the funds to the DP labs and is supported by more than 60 percent of the LDRD research funding. More than 95 percent of the LDRD research portfolio has a direct impact on the national security missions of the DP Laboratories.

Question. How could a similar program at the production plants be used to address the problems identified by the Chiles Commission in recruiting and retaining the best engineers and technicians for the weapons complex of the future?

Answer. Defense Programs is exploring a program in the production plants that is analogous to the Laboratory Directed Research and Development (LDRD) program to attract and retain the best possible people through activities including the development of new production and design concepts and the establishment of intern and cooperative student programs.

TRANSPORTATION SAFEGUARDS DIVISION

Question. The 30-Day Review found that "During the past year, DP's Transportation Safeguards Division (TSD), which is responsible for providing safe, secure and cost effective transportation for nuclear weapons in DOE custody received a 'marginal' security rating."

What is the Department's plan to improve the "marginal" safety rating the Transportation Safeguards Division received?

Answer. The marginal rating was the result of the postulated security threats growing faster than TSD resources. We have initiated a five year plan to enhance the resources of TSD that will put us into a position to satisfactorily respond to the postulated security threat. These resource enhancements are in both personnel, including enhanced training and an approximately 40 percent increase in the number of couriers over the next five years, and in equipment, including the accelerated replacement of the old-generation Safe Secure Transport fleet with the new-generation SafeGuards Transporters and the procurement of additional non-conventional escort vehicles.

Question. Has the Administration requested sufficient funds to improve TSD security as soon as possible?

Answer. Of the $115 million requested for secure transportation in fiscal year 2001, approximately $25 million is requested to fully support the security enhancements to overcome the marginal rating. The balance of the request, about $90 million, is needed to maintain the current level of operational availability of secure

transportation assets for Defense Programs, other DOE programs, and the Department of Defense.

TRAVEL LIMITATIONS AT THE LABS

Question. Last year, a $150 million cap on contractor travel expenses was imposed in an attempt to require greater efficiency and economy in lab travel. However, in talking to individuals at the labs, I am concerned that the travel cap has unfortunately forced cutbacks in programmatic work , significantly damaged morale of the workforce, and damaged the labs ability to recruit and retain the best and brightest scientists.

General Gioconda and Ms. Gottemoeller, do you agree that the travel cap has had some very negative effects and do you support raising the travel cap to a reasonable level?

Answer. (General Gioconda) Travel ceilings have resulted in efficiency and economy through improved business operations, including prioritization of travel, allocation and tracking of ceilings, and utilizing best practices in travel management such as following the Federal Travel Regulations reimbursement schedules. However, travel ceilings have also decreased the contractors' flexibility to handle discretionary travel such as training, recruitment and retention, and decreased their capability to handle new or unexpected requirements for programmatic travel. Compliance with travel ceilings has caused the contractors to utilize less than optimum methods of mission performance in order to keep travel costs down. We are concerned that these work-arounds and delays could actually increase the overall costs to the Stockpile Stewardship mission both in the short-term and the long-term.

Answer. (Ms. Gottemoeller) We recognize the concerns that led to the imposition of travel ceilings on the National Laboratories but, as a practical matter, they are translating into programmatic reductions that will delay the work on major Departmental initiatives in Russia, Ukraine, and other countries in the Former Soviet Union. Proper implementation and oversight of our work at the sometimes very remote sites in these countries require judicious travel by contractors as well as DOE headquarters personnel. These trips are strictly for project development, management, or audit and examination purposes. The impact of the cap on these programs, especially the international materials protection, control and accounting program, will be particularly devastating since expansion to new sites will require more, not less, travel for successful implementation.

I agree with General Gioconda regarding disposition of the travel ceiling. The minimum that should be done in fiscal year 2001 is raise statutory travel ceiling to a more reasonable level to cover critical missions. Even better than raising the statutory ceiling would be the elimination of the ceiling as a legal requirement since the statutory ceiling is excessively expensive to manage from both the Federal and the contractor standpoints. Another option, such as the inclusion of a reasonable travel goal or target for the Department to manage in the report language only, is also preferable to continuation of the statutory ceiling.

PRODUCTION READINESS

Question. The 30-Day Review found that "production readiness, especially at Y–12, needs more support because many of these facilities have not been maintained and need to be restored in a timely manner to meet refurbishment production schedules."

The 30-Day Review also stated, "Changes and upgrades to the manufacturing facilities are needed in order for DOE to meet the military's near-term and long-term production requirements" necessary to meet the stockpile refurbishment mission."

General Gioconda, what is plan for and cost of this needed support?

Answer. We are addressing these needs in three ways. First, we have established readiness campaigns to fill gaps in manufacturing processes and capabilities that are required to support future workload, but are not available within the complex today. Campaigns for reestablishing the capability to produce tritium and plutonium pits are ongoing. In fiscal year 2001, we are proposing to initiate the Secondary Readiness Campaign to ensure future manufacturing capabilities (equipment, people, processes) are in place and ready for production of secondaries. The High Explosives/Assembly and Nonnuclear Readiness campaigns are scheduled for initiation in fiscal year 2002. The fiscal year 2001 budget request includes about $200 million to support these activities.

Second, we have proposed new construction activities at the Y–12 Plant to help address these issues as well. The Highly Enriched Uranium Materials Facility will support the consolidation of long-term highly enriched uranium materials and the Special Material Complex, a candidate under the Defense Program Preliminary

Project Design and Engineering Project, will enhance operational reliability for materials processes required for future workload. The fiscal year 2001 budget request includes about $27 million to support these activities.

Finally, we have recently commissioned a comprehensive assessment of our recapitalization needs in response to the 30-Day Study recommendation. Despite our recent investments to downsize and modernize the weapons complex infrastructure, we realize that more improvements are needed to meet future refurbishment production schedules.

Question. What is the total cost over how many years?

Answer. We are in the process are finalizing our planning for the production readiness campaigns and are initiating planning efforts for the recapitalization needs. I expect that this information will be fully developed in time for the fiscal year 2002 budget.

Question. Is the appropriate amount in the 2000 and 2001 budgets?

Answer. The Department has submitted a supplemental budget request for fiscal year 2000 primarily to restart of Enriched Uranium Operations at the Y–12 Plant. All critical needs for fiscal year 2001 are addressed in the budget request. As always, there are items which could not be accommodated, or those which could benefit from additional funding, but it is our judgement that these are not critical needs.

TEST READINESS

Question. The 30-Day Review found, "more long-range planning is needed to ensure that the Nevada Test Site will have the infrastructure and intellectual base to maintain readiness for twenty years or more. Work is currently underway in the Nuclear Weapons Council to evaluate options for enhancing test readiness through consideration of specific testing scenarios."

What options have the Nuclear Weapons Council identified to address the long-term infrastructure and intellectual base at the Nevada Test Site that will allow us to maintain test readiness?

Answer. The Nuclear Weapons Council (NWC) chartered the DOD Program Analysis and Evaluation (PA&E) Office together with Defense Programs to review the adequacy of DOE and Defense Threat Reduction Agency (DTRA) planning and programs to maintain the test readiness posture directed by the President. Those results were briefed to the NWC on October 14, 1999, at which time the NWC requested DOE and PA&E perform additional case studies to evaluate specific weapons systems and the possibility to reduce readiness time to 18 months. Current plans are for the NWC to be briefed on the results of that analysis on April 19, 2000.

For the past 8 years Defense Programs has committed resources to archive knowledge, preserve unique equipment and infrastructure, and maintain access to experienced personnel. It is generally accepted that over time the ability to access personnel or to operate and maintain aging equipment will deteriorate to some level if not exercised.

In order to attract and maintain a workforce with skills and knowledge relevant to test readiness, NTS is actively involved in supporting the technical campaigns centered at the design laboratories. Included in these campaigns are subcritical experiments which are critical to the maintaining test readiness since they exercise most of the functional area required for an underground nuclear test. The DOE Nevada Operations Office is also attracting various work-for-others programs to the NTS. These programs, also help to distribute the costs for NTS infrastructure across several customers.

Although there are many unique capabilities at the test site that must be preserved, most of the special technical knowledge and skills required to prepare a device for testing, field the diagnostics, perform the test and analyze the results resides at the design laboratories and production facilities. These are capabilities that will be maintained though other stockpile stewardship activities. Consequently there is no line-item in the DOE Defense Program budget labeled Test Readiness.

Question. What is the cost of these efforts in fiscal year 2001 and future years?

Answer. Because test readiness is derived primarily from other Stockpile Stewardship programs, there is no line-item in the DOE Defense Program budget labeled Test Readiness. However, the Stockpile Stewardship portion of the DOE/NV budget is generally characterized as the test readiness budget, and the planned amount identified for fiscal year 2001 is approximately $188 million. In the outyears, we expect the cost to be approximately level, assuming that we maintain the current level of readiness.

Question. Is the budget request adequate to support test readiness?

Answer. The Stockpile Stewardship portion of the NTS budget is generally characterized as the test readiness budget. As long as the budget is adequate for maintaining active experiment programs, particularly subcritical experiment programs which exercise most of the functional areas required for an underground nuclear test, the Department will be able to maintain test readiness. The current budget request will provide adequate funding to meet those needs.

DOE/NIH PARTNERSHIP FOR TECHNOLOGY DEVELOPMENT

Question. Report language in the Defense Authorization bill for this current year established a partnership between DOE and NIH. The language set aside $6 Million in the DOE Defense Programs budget, to be paired with comparable funding from the NIH, to set up a pilot program to jointly explore the potential of DP technologies to impact medical health. Similar language also appeared on the NIH bills.

The Pilot Program seeks to ensure that technologies developed within the nuclear weapons program are carefully evaluated for their impact on the health sciences, with the goal of achieving clinical applications and improved national health care. To the best of my knowledge, the DOE has not begun to implement this program.

What is the status of this DOE/NIH Medical Technology Partnership program?

Answer. We have begun this work with NIH. A number of successful activities are underway utilizing the imaging capabilities developed for the DP mission. In one case, the three-dimensional ultrasound developed for stockpile stewardship is improving resolution as an early diagnostic for breast cancer. This improved resolution will transfer directly back to stockpile stewardship benefit. In other cases, the femtosecond laser, developed as a cutting tool for national security requirements, is being refined as a tool for neurosurgeons and knowledge of fluorescing molecules is being redirected to diabetes therapy and potentially an artificial pancreas.

A preliminary discussion occurred between Secretary Richardson's staff and NIH Deputy Director Wendy Baldwin. This will be followed by discussions between Defense Programs staff and NIH personnel to formalize the program. The Joint Conventional Munitions Memorandum of Understanding between the Departments of Energy and Defense will serve as a model for this new partnership.

INDUSTRIAL PARTNERSHIPS

Question. The challenges faced by the weapons laboratories and plants have dramatically escalated with the cessation of nuclear testing. Now, more than ever before, they need access to the very best engineering and scientific talent in our nation.

The labs and plants have great staff, but they don't have a corner on the nation's expertise. American industry, both large and small companies, frequently has the cutting edge technology that the complex needs.

Sometimes we can buy the help we need, but in many cases, partnerships are the best way to leverage the talents of different contributors. I'm very concerned that the Department has sent strong and consistent messages for the last few years that partnerships with industry are discouraged. I think that's exactly the wrong message to be sending.

In fiscal year 1996, more than $200 Million was requested for industrial partnerships. There isn't even a line item for these in fiscal year 2001. In the current year, $14 Million was identified.

On February 14, I chaired a Hearing of the Energy and Natural Resources Committee in Albuquerque. The Directors of each New Mexico laboratory expressed strong support for industrial partnerships and great concern that the funding for them has vanished.

Do you concur with my view that industrial partnerships are a critical contributor to the ability of the laboratories to deliver on their missions?

Answer. In fiscal year 2001 there is no longer a specific Technology Partnership decision unit in the budget, although Defense Programs will continue to support various technology partnerships within the Campaigns which they support as a means to reach the goals and objectives of the Stockpile Stewardship Program. I agree with your assessment that leveraging partnerships with industry is critical to the successful achievement of the Department's nuclear weapons mission. By teaming with the private sector, our laboratory scientists and engineers have been able to solve technological problems that exist in the laboratories and industry in a timely, creative, and cost-effective manner.

I also agree that the message to industry needs to be one of renewed support and funding stability to encourage development of productive partnerships both for the benefit of the Stockpile Stewardship Program and U.S. economic competitiveness. For example, Sandia National Laboratories is working with the State of New Mexico

Legislature to pass a bill where a portion of the gross receipts tax paid by Sandia can be used to foster partnerships and small business technical assistance. However, this is very limited as it represents only $1.8 million this year, but is indicative of how valuable partnership activity is to the Department and the Laboratories.

Question. Are you interested in working with me to restore a significant focus within the Department on these activities?

Answer. Yes. We are establishing a significant focus on industrial partnerships by further integrating them with our primary mission, Stockpile Stewardship. The fiscal year 2001 Budget Request for the Stockpile Stewardship Program includes approximately $14 million for technology partnership activities, an increase of $1.5 million over fiscal year 2000 funding and the first increase in this program in years. Beginning in fiscal year 2001, the Department has proposed a new budget structure for the integrated Stockpile Stewardship Program. Within this new budget structure, Technology Partnerships will directly support the Stockpile Stewardship Program within the Campaigns budget line. While the details of how this strategy will be executed in the field have not been finalized, one of our goals is to leverage industry capabilities in order to meet our program challenges within the fiscal year 2001 budget. We would like to promote industrial partnerships with the weapons program, especially those that support Stockpile Stewardship and I am open to discussing options to accomplish this.

RADIOGRAPHIC DIAGNOSTIC FACILITIES

Question. DOE is currently operating several radiographic diagnostic experimental facilities. They include PHERMEX and DARHT at Los Alamos, FXR and the Contained Firing Facility at Lawrence Livermore, LANSCE at Los Alamos, and the Z-pulsed power facility at Sandia.

Could you briefly explain the importance of each of these facilities to the stockpile stewardship program?

Answer. PHERMEX, DARHT, FXR and the Contained Firing Facility are or will be experimental hydrodynamics facilities. They provide x-ray images through an imploding nuclear weapons system containing a high-explosive driven primary but with the special nuclear materials replaced by surrogates. Absent nuclear testing, these experiments are a principal means by which the weapons laboratories can observe the impact on system behavior of changes resulting from aging or design, material and manufacturing changes during refurbishment. These experimental facilities are providing higher resolution will be required to validate predictions of nuclear weapons performance that will be generated through the new ASCI codes.

The two principal LLNL facilities are FXR and Building 851, located at site 300, about 15 miles southeast of LLNL. Both are used for experimental work on primary systems and for reimbursable work for the Department of Defense. FXR conducts about 10–15 major experiments in weapon full geometry each year. The Building 851 facility has been used for "Manybeam Velocimetry" experiments. In total about 150–200 smaller tests are conducted each year. Conducting the full complement of weapon experiments has required the capacity of two facilities. PHERMEX at LANL provides similar capabilities for LANL experiments that FXR does at LLNL.

The Contained Firing Facility of CFF, is a facility upgrade to FXR. It will maintain the same beamline, but will provide for full containment of the explosion in order to mitigate adverse environmental effects. Closure of the FXR facility has never been planned., but its use will be changed as many full system hydrodynamics shots will be moved to DARHT.

DARHT's second axis, under construction at LANL, will, for the first time, provide two-axis multi-time radiographs of imploding primary systems with improved resolution and intensity over current single axis facilities. This will provide improved ability to infer cavity shape and criticality of imploding primary systems essential for both performance and nuclear safety assessments. Once operational, this will be the mainstay of DP radiographic efforts.

The Z-pulsed power facility at Sandia is principally a high energy density experimental facility that supports physics relevant to radiation flow and hydrodynamics of secondaries and also will study materials properties. To support these experiments Z will use the NIF beamlet experiment as a radiographic source for experiments relevant to secondary physics. This will complement the radiographic facilities above that support primary research.

LANSCE's principle relevance to radiography is to provide the proton beam that is used in experiments to explore proton radiography for potential use on a future hydrodynamic test facility. This new technology shows great promise to image very dense systems with high resolution. These experiments have also been valuable in measuring properties of some small scale high-explosive experiments. These

LANSCE experiments are small-scale scientific experiments and do not per se constitute major hydrodynamics tests of stockpile devices. Such uses are a small part of the total LANSCE effort which is principally focused on obtaining materials properties and nuclear data in support of both Defense Programs and the Office of Science.

Question. What is the schedule for closing some of the older facilities as the newer more advanced facilities come on line?

Answer. Currently Defense Programs is developing a hydrotest facility user plan to consolidate operation at FXR/CFF and DARHT with both labs using each facility, and other facilities to be closed.

PHERMEX is scheduled for shutdown in fiscal year 2001 after completion of a major special hydrodynamics test. It is intended that LLNL B851 be closed within about a year of the time CFF is completed in late fiscal year 2001.

Until recently, both LLNL and LANL operated two accelerators, FXR and an RF LINAC at LLNL, and PHERMEX and ECTOR at LANL. When the current hydrotest projects are completed, the LLNL RF LINAC, and LANL PHERMEX and ECTOR machines will be decommissioned, leaving only DARHT and CFF to meet the needs of the hydrotest program.

Question. FXR is currently being used to support development work for DARHT. Why hasn't FXR been closed as planned? When do you expect the FXR mission will be completed and the facility closed entirely?

Answer. CFF [Contained Firing Facility] is a facility upgrade to FXR. It will maintain the same beamline, but will provide for full containment of the explosion in order to mitigate adverse environmental effects. Closure of the FXR facility has never been planned but its use will be changed as many full system hydrodynamics shots will be moved to DARHT.

Question. Does DOE plan to close any of the existing facilities upon completion of the second axis of DARHT? Please explain.

Answer. PHERMEX, ECTOR, and Building 851 will be closed as operations are consolidated at DARHT and CFF. This will happen before DARHT second axis is operational. While these schedules anticipate DARHT second axis operations they are not contingent upon it.

Question. What will proton radiography being developed at LANSCE provide that DARHT, Advanced DARHT or other hydrodynamic facilities cannot?

Answer. Primary weapons designers have believed for years that they will need a multi-time mutli-axis radiographic capability in order to provide the resolution necessary to assess the safety and performance of a primary system to the small margins of uncertainty that will be required. The goal is to be able to reconstruct a 3-D moving picture of an imploding primary system. Efforts are ongoing to provide a sound scientific justification for the requirements for such a facility, including the number of axes. Most estimates indicate that it would require 4–12 beam lines.

While multiple x-ray beams of the type used in current facilities could be one approach, recent improvements suggest that proton radiography could be an excellent alternative. Proton radiography uses magnetic lenses to focus high energy photons onto an imaging system during an imploding weapon experiment. This works very much the way a camera lens focuses light on film to make a photograph. With x-ray radiography only a small fraction of the energy makes it through the target, whereas most high energy protons would make it through a target, providing much better resolution. Though this application to radiography is a recent development, it is a mature technology since the basic capabilities have been employed in proton accelerators for years. The principal challenge is to tailor an accelerator design and beam transport system to the requirements for multi-axis radiography in a way that minimizes costs.

PLUTONIUM DISPOSITION

Ms. Gottemoeller, the Congress provided $200 million in fiscal year 1999 to jumpstart negotiations on disposing of surplus weapons plutonium in Russia. I have repeatedly heard that the existence of this $200 million, which can be obtained by Russia only after the disposition work actually starts, has been a tremendous impetus towards finalizing the disposition protocol.

I'm very concerned that we move as rapidly to start with the disposition. As you know, this is material for well over 6,000 weapons. I'm therefore puzzled that the Department chose to identify $49 Million of that $200 Million to cover prior year balances and very recently has proposed to defer another $40 Million of this Fund in your fiscal year 2000 supplemental request.

I don't think we are sending an appropriate message to the Russians about the urgency of disposition of weapons-grade plutonium with these funding cuts, even if we propose to restore the cuts later.

Question. Ms. Gottemoeller, do you share my view that disposition of these weapons materials represents one of our most critical national security challenges before us?

Answer. Yes. The disposition of surplus weapons-usable fissile materials does represent one of our most critical national security challenges. These disposition activities, along with other efforts to dismantle weapons delivery systems, secure nuclear materials, and prevent the spread of nuclear weapons knowledge, are key parts of the United States Government's strategy to reduce the global danger from the proliferation of weapons of mass destruction.

Question. Can you assure me that the Department's actions in using almost one-half of the $200 million for other purposes will not harm the negotiations?

Answer. The Department's fiscal year 2001 budget requests $49 million to become available in fiscal year 2004, when the funds are needed for plutonium disposition in Russia. Congressional approval of the Department's fiscal year 2001 budget request will restore funding to the $200 million level, which provides the greatest assurance that this important arms control and nonproliferation initiative with Russia can be successfully concluded.

Question. What is the status of the negotiations with the Russians?

Answer. Following extensive negotiations with Russia over the past year on a bilateral plutonium disposition agreement, all of the outstanding issues, save one, have been resolved. Our aim is to resolve this issue in a matter of weeks and have an agreement that can be signed later this Spring.

OVERALL BUDGET—PRIORITIES FOR ADDITIONAL FUNDING

Question. If the Committee were to provide you additional funds, what would be your next priorities and at what level of funding?

Answer. The President's request is an appropriate level for competing requirements and for meeting critical program objectives. I can assure you that we will continue to carefully examine our program and budget priorities through the budget process.

TASK FORCE ON NONPROLIFERATION

Secretary Richardson recently announced the creation of a new task force, to be led by former Senator Howard Baker and Lloyd Cutler. The Secretary has tasked the group to send him a report by September outlining ways to improve programs involving materials protection, economic development and cooperation on R&D between Russian and American Scientists.

Question. What types of concerns prompted the Secretary's creation of the panel?

Answer. Secretary Richardson decided to use the established Secretary of Energy Advisory Board (SEAB) as the vehicle for this Task Force on Russia. The objectives of this Task Force are: to provide recommendations to the Secretary of Energy regarding the policy priorities established by DOE to pursue cooperative nonproliferation and nuclear safety programs with Russia and the other countries of the Newly Independent States (NIS); to identify crucial program areas that may not have been addressed in the past; and to provide an assessment of the performance of DOE's programs in achieving national security and nonproliferation missions. The Task Force's recommendations of new potential areas of cooperation may be used as a blueprint for future programs in the next Administration.

Question. Are there areas where the Labs can increase their collaborations with the Russians on non-proliferation R&D programs?

Answer. Yes, there are at least two such areas. First, as part of the $100 million Long-term Nonproliferation Initiative, we are hoping to engage our labs and Russian specialists on the subject of enhancing the proliferation resistance of reactors and the nuclear fuel cycle. This, of course, is contingent on Russia complying with the commitments it has given the United States regarding cooperation with Iran. We are also proposing research on long-term solutions for spent fuel and radioactive waste. Secondly, under the Nuclear Cities Initiative, a number of our laboratories are hoping to contract for services from Russian counterparts on a range of non-military issues, from the development of simplified computer codes, to analyses of radionuclide transport through various geological media.

Question. Do you have a good system for measuring success in the Russian programs? Should we limit future funding for NCI to demonstrable conversion from military to civilian activities?

Answer. All of our Russian programs have measures of success; however, some of them are more easily measured than others. Among those with straightforward metrics are the MPC&A program, where we measure the amount of special nuclear material and number of facilities secured, the Highly Enriched Uranium Purchase program, where we measure the amount of uranium blended down, and the Plutonium Disposition program, where we measure the number of kilograms of plutonium that are to be processed. The programs directed at preventing the migration of scientists with weapons knowledge to countries and organizations of concern are more complex to measure. The Initiatives for Proliferation Prevention Program measures the number of scientists employed, the number of institutes engaged, financial contributions from industry, the number of new enterprises created, and similar metrics. The Nuclear Cities Initiative measures number of workers employed, number of new jobs created, number of individuals trained, level of private industry participation, number of facilities converted, and the square footage of space transferred from weapons to non-weapons work. NCI also provides for changes in municipal infrastructure to enable transformation of the nuclear cities from a total weapon-based economy to a commercial economy in the ten closed cities.

The Nuclear Cities Initiative is making demonstrable progress in transferring former weapons facilities to non-weapons work. The recent agreement to dedicate over 500,000 square feet of floor space at the Avangard nuclear weapons plant at Sarov to commercial work is a notable example of such progress. Such metrics clearly indicate that the Nuclear Cities Initiative can achieve important national security goals for the United States by working with the Russian Federation to accelerate the downsizing of the Russian nuclear complex.

Question. Can you elaborate on the types of threats the United States and the world community are facing in Russia?

Answer. The current economic and security situation in Russia poses strong challenges for U.S. security interests. Within Russia, there continue to be cases of "insider thefts" of sensitive material, almost certainly a reflection of the prevailing economic conditions in Russian society. Underpaid security guards and workers at nuclear facilities, as well as world class scientists with access to sensitive materials and information, remain a worrying "insider" problem. Over the past several years, Russia also has experienced a sharp rise in terrorist activity. The Russian military in 1999 reported 560 terrorist incidents in Russia, including several reported threats against facilities holding sensitive materials. In addition, Iran and other nations seeking to develop WMD capabilities also are looking to exploit Russia's security conditions through aggressive efforts to acquire fissile material and expertise. The MPC&A program, in cooperation with the Russian government, has provided upgraded security for nearly 450 metric tons of nuclear material, enough material to build 24,000 nuclear devices. In so doing, the program represents a powerful countervailing force against those trying to exploit Russia's endemic security problems.

MATERIALS PROTECTION CONTROL & ACCOUNTING

Securing and disposing of nuclear material in Russia is one of our most important national security objectives. However, the GAO recently issued a report that indicated the Department had achieved very limited progress in improving the security of nuclear materials in Russia. The report stated that only 7 percent of the 650 metric tons have been identified as being at risk for theft or diversion, are stored in buildings with installed security systems.

Question. How would you respond to the GAO Report?

Answer. The GAO only had one recommendation—to develop and annually update an overall cost estimate and time frame for completing the MPC&A program. We completely agree with this recommendation and have already begun developing this estimate. It will be completed in May.

However, the GAO Report also stated that "About 50 metric tons, or about 7 percent of the approximately 650 metric tons of the weapons-usable nuclear material, are in buildings with installed security systems." Actually, rapid upgrades to approximately 450MT of additional at-risk nuclear material are either ongoing or have been completed. The 450MTs that have either been secured or are in the process of being secured is equivalent to roughly 24,000 nuclear devices. The 7 percent refers to weapons-usable material that has received comprehensive security upgrades, meaning all aspects of the MPC&A installation work is complete. Rapid upgrades are the first steps DOE takes to immediately improve security and thus reduce the proliferation threat. Rapid upgrades include, for instance, 1-ton delay blocks, steel cages, bricked windows, hardened doors and mechanical locks. Once rapid upgrades are complete, focus is then placed on completing the required comprehensive secu-

rity upgrades, which involve more advanced material control and accounting systems.

Access to sensitive MinAtom facilities was another issue raised by the GAO, and DOE is addressing this concern in a number of ways. Secretary Richardson and Minister Adamov established a Task Force to develop solutions to the problem, and there are ongoing discussions and negotiations in this forum. DOE has developed additional guidance regarding access, and this guidance will be used in future MPC&A upgrade negotiations and contracts. Access needs vary at each site, and the access guidance provides for access to be negotiated on a site by site basis as needed.

Question. The GAO report also recommended the Department develop a cost estimate and schedule for completing the MPC&A program. Is that possible at this time?

Answer. Yes. DOE has already begun developing this updated MPC&A Life Cycle Cost and Schedule Estimate. The revised estimate will be completed by May 2000 and, as the GAO recommended, will be updated annually in December.

Question. Please update the Committee on recent developments in your work with the Russian Navy?

Answer. The Department of Energy's (DOE) cooperative relationship with the Russian Federation Navy (RFN) began in 1996, when the RFN requested assistance from DOE to secure highly enriched uranium (HEU) fuel. In 2000, DOE will:

—commission four HEU fuel facilities;

—complete work to secure test reactors belonging to the Russian Ministry of Defense at a facility in Sergeiev Posad;

—continue work supporting MPC&A upgrades at RFN facilities at Kurchatov Institute; and

—provide MPC&A training for Russian Navy personnel.

Building on what is now a solid record of accomplishment—reflected by security upgrades to some 30 Metric Tons of proliferation attractive material—DOE has also been asked by the Russian Navy to expand this relationship to include a long term plan for the physical protection of over 30 Navy strategic and tactical nuclear weapon storage sites. In 2000, DOE will complete initial rapid upgrades at seven sites, complete comprehensive upgrades at one of these sites and sign contracts for initial rapid upgrades at least seven additional sites.

DOE will work only at those sites where access can be granted to ensure that appropriated funds are being spent properly.

NEW INITIATIVE FOR $100 MILLION

Question. Couldn't both requests just as well be included within the existing MPC&A program and within an expanded Nuclear Cities Initiative?

Answer. From a budgetary perspective, the requests could just as well be included within the existing MPC&A program and within an expanded Nuclear Cities Initiative. However, the Long-Term Nonproliferation Program for Russia will establish a series of new efforts to respond to recognized but previously unaddressed threats to U.S. national security. This expanded component of our nonproliferation work will supplement on-going Departmental programs and establish new and accelerated solutions to the most serious dangers presented by the Russian nuclear weapons complex and civilian nuclear facilities.

This program both builds upon successful on-going projects and takes advantage of new opportunities presented by the Russians to dramatically reduce the production of plutonium; enhance the proliferation-resistance of nuclear fuel cycle technologies; accelerate the planned downsizing of the Russian nuclear weapons complex through the closure of facilities and consolidation of nuclear materials into fewer locations; and expand nuclear material protection activities to the most sensitive Russian Navy sites. All of these activities reflect our deep concern over the risks of theft and diversion of nuclear materials in the unique circumstances of the post-Cold War environment.

Question. Why were they included as new initiatives instead of suggested as very logical and very positive additions to existing programs?

Answer. The work in the $100M initiative does not duplicate any existing MPC&A work and responds to new opportunities. The $20 million for MPC&A will expand work into the new, unplanned and previously unfunded areas of Russian Navy cooperation at highly sensitive sites, and provide similar opportunities for our material consolidation and conversion and Russian emergency management system work. For example, the new funding will enable us to convert an additional 1.5 metric tons of highly enriched uranium—which is attractive to proliferators—to low enriched uranium.

The $10 million for the Nuclear Cities Initiative (NCI) will be used in a new project to accelerate the closure of the weapons production capabilities at Sarov (Avangard) and Zarechnyy (Penza-19) to shift large portions of their work force to work outside of the nuclear weapons complex, related commercial activities, and provide civilian employment opportunities for scientists and technicians currently working in these facilities. We are already achieving success in the transfer of 500,000 square feet from weapons work to commercial production at Avangard. We would like to accelerate this process at Avangard and begin work a similar effort as quickly as possible at Penza-19.

Question. The budget request includes a new $100 million non-proliferation initiative. Included within that request would be funding for increased Materials Protection, Control and Accounting work on Russian Naval fuels as well as funding for conversion of some of the Russian weapons facilities.

A portion of the funding presumes an agreement with the Russians for them to stop the reprocessing of civilian spent fuel and the production of plutonium. Is there an agreement with the Russians? What is the status of negotiations?

Answer. Negotiations continue to take place on an intensive basis with Russian Federation officials to develop a high-level Joint Statement on a moratorium on further accumulation of separated civil plutonium resulting from the reprocessing of civil power reactor fuel in Russia. This effort will complement established U.S. programs to secure and eliminate plutonium arising from weapons dismantlement. Once this high-level Joint Statement is signed, which we expect to occur early this summer, we will proceed immediately to complete the Work Plan and Implementing Agreement necessary to implement the Initiative. These documents, which we are already developing with the Russians, are to be completed by October 1.

NUCLEAR CITIES INITIATIVE

Question. I've spoken out in several statements, most recently at Princeton University on March 14, with concerns that the credibility of the current Nuclear Cities program suffers in Congress from a lack of transparent milestones. I've suggested that the only way to gain significant funding for the Initiative would be for our support to be tied to such milestones that lead to downsizing of the entire Russian nuclear cities complex to levels consistent with their future national security needs.

Dr. Gottemoeller, you've described progress within the Initiative along the very lines that I've suggested. I appreciate your progress. Based upon your understanding of the interests of the Russian MinAtom leadership, would you anticipate that the Russians would agree to a firm schedule for downsizing with verifiable milestones, in return for a significant increase in the Nuclear Cities budgets?

Answer. The Department of Energy fully shares your interest in securing the rapid downsizing of the Russian nuclear complex to levels consistent with Russia's national security needs. MinAtom has developed a plan for significant reduction of their complex, and I believe the Russians are committed to implementation of the plan. Senior leadership within MinAtom responded to your remarks at the Princeton Conference by affirming the Russian Government's strong desire to downsize its nuclear weapons complex; they also stated that NCI is essential if they are to implement their conversion plans on an accelerated basis, consistent with the desires of both Governments. I believe that there is a widely held view within the Russian leadership that the nuclear weapons complex is larger than necessary and too costly to sustain. On March 31, 2000, President Putin, in his first major policy address as the newly elected President of the Russian Federation, reaffirmed this position during a speech to nuclear workers in Snezhinsk. With the Russian acceptance of downsizing, we should indeed be able to provide concrete and verifiable measures of downsizing of facilities and transfer of people to the civilian sector. In a significant new development, we recently signed an agreement with the Avangard weapons production plant that will move 500,000 square feet of work space from within the weapons complex to the open part of the city. This constitutes a real and measurable reduction in the Russian nuclear complex. Furthermore, strategic plans are under development by U.S. representatives and Russian scientific and downsizing community stakeholders within the three closed cities of Sarov, Snezhink, and Zhleleznogorsk to map out the commitment and the time-line to accomplish these complex, downsizing efforts. With your support and the support of the Congress, we can make even greater progress in the future.

CORE CONVERSION OF RUSSIAN REACTORS

Question. In 1997, Vice President Gore announced a centerpiece of the Clinton Administration's arms control package. It involved a commitment from Russia to halt production of weapons-grade plutonium by the end of this year by converting their

production reactors to new cores that would not continue the plutonium production. The project was advertised to cost about $80 Million.

The Russians have stated that these reactors produce critically needed heat for their cities, and can't simply be shut down. Most of this project is funded through Nunn-Lugar DOD funds, but the safety evaluations are being done through DOE funds.

Lately, reports are circulating that this program is being called into serious question by the Russians. For one thing, The Vice President's plan called for conversion of these reactors to Highly Enriched Uranium cores—the very material that we're desperately trying to encourage the Russians to dispose of. It's never been clear to me why the core conversion was such a great idea if it increase Russian use and traffic in HEU.

Then there's the issue of safety. These reactors are early versions of the Chernobyl reactor. These reactors have glaring safety problems, we've got plenty of evidence of that already. Our and Russian experts are pointing out that the safety margins are even worse if we convert these cores to HEU.

The Russian have proposed that this project be canceled and that we assist them in procurement of gas turbines instead. I understand there is a cost issue on these gas turbines, with Russian and Administration cost estimates very different ($230 Million vs $1 Billion).

What's your view of this core conversion program? Should we be encouraging this use of HEU and perpetuation of Chernobyl-type reactors, to say nothing of Chernobyl-type reactors with degraded safety margins?

Isn't it time for the Administration to explore other options?

Answer. Both the United States and Russian governments remain committed to achieving the objective of the 1997 Plutonium Production Reactor Agreement (PPRA), i.e., stopping the production of weapons-grade plutonium from the three remaining Russian plutonium-producing reactors. Those reactors have not been shut down because, in addition to producing a combined two metric tons of plutonium a year, they also supply energy for the surrounding regions. Since receiving initial funding in fiscal year 1998, a joint effort was undertaken to end weapons-grade plutonium production through the conversion of the three operational reactors to a highly enriched uranium fueled core design. The results of this design effort have raised significant questions in Russia and the U.S. regarding the benefits versus the risks of this approach. We are now assessing with Russia whether core conversion, possibly with a low-enriched uranium fuel, or provision of fossil fuel energy sources is the most safe, efficient and cost-effective approach. Our joint goal remains to end the production of weapons-grade plutonium consistent with the intent of the PPRA.

COMPETING NN R&D CONTRACTS

Question. What is the status of your efforts to comply with this provision?

Answer. Regarding competing R&D contracts, we are following Congressional direction, and have initiated the process to start open, competitive acquisition of 25 percent of our R&D program. While there are no projects where work is procured through a DOE competitive process open simultaneously to DOE laboratories, universities, and private companies, approximately 3 percent of our program funds go directly to industry and 1 percent to universities. In addition, approximately 15 percent of R&D funds provided to the laboratories go to industry, as well as 3 percent to university researchers.

As a start to this process, we are finalizing a draft, joint solicitation with the Department of Defense for release this summer that will procure seismic-related research and development for the ground-based portion of our Nuclear Explosion Monitoring program, resulting in approximately 4 percent of that part of our fiscal year 2000 program being acquired through open competition. Our progress toward acquiring more work through open, competitive means has been slowed by fiscal year 2000 undistributed reductions which eliminated the source of funds for any new work. The remaining budget is dedicated to many large, multi-year projects, and we did not believe it prudent to terminate or adversely impact on-going work that is scheduled to meet firm delivery dates or is jointly funded with other agencies. We are currently identifying specific research and development thrusts in each program area for open competition in fiscal year 2001.

PROPOSAL TO ESTABLISH SEPARATE SECURITY BUDGET

Question. General Habiger, you have testified that the Department will be proposing a unified separate budget for its safeguards and security program, and that safeguards and security through-out the weapons complex will be your responsibility. However, Sec. 3212(b)(6) of the National Nuclear Security Administration Act

specifically gives responsibility for safeguards and security to the Administrator. And Sec. 3232(c) of the Act provides that there will be a Chief of Defense Nuclear Security working for the Administration to implement security policies. Isn't your proposal for a unified Department-wide security budget inconsistent with the clear Congressional direction of the NNSA Act?

Answer. No, we believe that it fully supports the intent of the legislation, i.e, to strengthen safeguards and security throughout DOE, and the NNSA. This unified budget will provide the NNSA Administrator and his Chief of Defense Nuclear Security, with a definitive budget profile that can be used to provide overall better planning and execution. In the past, the security funding was obtained from overhead accounts that were subject to nonprogrammatic changes depending on individual priorities at each facility.

Question. Shouldn't the responsibility for security be integrated into the line program? Shouldn't we hold the lab director's responsible for security at their site?

Answer. Responsibility for security at our laboratories remains unchanged, i.e., the field office managers and contractors will continue to be the first line of defense to assure appropriate security at their respective locations, and the LPSO's will continue to be accountable for integrated security and program implementation. The unified budget will provide them with a definitive funding profile that will permit better planning of security implementation.

POLYGRAPHS

Question. What is the current best estimate of the number of employees subject to polygraphs? If the figure is above 1000, why was it changed? And will my concerns on the use of polygraphs be part of an integrated security program.

Answer. In October 1999, Congress passed the National Defense Authorization Act (NDAA) for fiscal year 2000. Section 3154 of the NDAA requires the Secretary of Energy to carry out a counterintelligence polygraph program for the defense-related activities of the Department. The counterintelligence polygraph program consists of the administration of a counterintelligence polygraph examination to specified persons who have access to high-risk programs.

On December 17, 1999, reflecting the Congressional mandate of Section 3154, DOE published a final rule for the use of polygraph examinations for certain DOE and contractor employees, applicants for employment, and other individuals assigned or detailed to Federal positions at DOE. (64 FR 70962) The Polygraph Examination Regulation identifies eight categories of positions which are eligible for counterintelligence polygraph examinations.

On December 13, 1999, I issued a memorandum for all DOE employees identifying the specific positions within the eight counterintelligence categories covered by the Polygraph Examination Regulation that will be subject to the polygraph testing. I estimated that approximately 800 individuals throughout the DOE complex would undergo counterintelligence polygraph testing during the implementation of the counterintelligence polygraph program. I also noted that Section 3154 forbids DOE from providing anyone initial access to a SAP or the PSAP without first signing a consent agreement and then taking a counterintelligence polygraph examination. I stated that this statutory requirement would be implemented in accordance with the terms of the Polygraph Examination Regulation.

I estimate that between 2600 and 3100 employees currently in one or more of the eight counterintelligence categories covered by the Polygraph Examination Regulation will be polygraphed over the next five years; however, approximately 1350 additional employees will require initial access to a SAP or the PSAP during Calendar Year 2000, and must be polygraphed in accordance with Section 3154. I intend to submit to the Congress legislation that would amend Section 3154 of the NDAA to provide authority to identify the specific positions within the Department which should be eligible for a counterintelligence polygraph examination.

I share your concern on the use of polygraphs as part of an integrated counterintelligence program. Section 3154(g) of the NDAA required DOE, in consultation with the Federal Bureau of Investigation (FBI), to develop procedures for identifying and addressing "false positive" results of polygraph examinations, and to ensure that adverse actions are not taken against an individual solely by reason of that individual's physiological reaction to a question in a polygraph examination. DOE provided a draft of its Polygraph Examination Regulation to the FBI for its review and comment. The FBI concurred in the issuance of the Polygraph Examination Regulation and did not recommend any changes relative to those portions addressing DOE's procedures for addressing "false positive" results and not denying or revoking an individual's access based solely on the results of a polygraph examination.

I believe that these procedures as set forth in the final Polygraph Examination Regulation successfully address your concerns and those received during the public comment period on the use of polygraph examinations as part of an integrated counterintelligence program.

CYBER SECURITY

Question. General Habiger, you have requested $30.3 million for cyber security at the Department. The budget indicates a great majority of that money will be spent at headquarters for hiring new FTEs, and to provide policy, planning, training, and technical development. Why did the Department not request money for actual cyber security upgrades at the laboratories?

Answer. A majority of the $30.3 million requested is directed towards improving security Department-wide and is broken out as follows: $15 million is for hardware and software tools to improve unclassified system security; $3.35 million is requested for conducting cyber security training; $12 million will be spent to significantly increase our cyber security incident response capability ($5M), implement a Public Key Infrastructure Department-wide ($2M), and complete additional ongoing cyber security activities.

QUESTIONS SUBMITTED BY SENATOR LARRY CRAIG

LABORATORY DIRECTED RESEARCH AND DEVELOPMENT

Question. Last year, Congress eliminated the use of environmental management funds for the purpose of laboratory directed research and development—so called "LDRD" programs. I do not agree with this restriction because LDRD contributes to the development of innovative new technologies. DOE has requested an increase in LDRD for non-Environmental Management programs from the current 4 percent to 6 percent. Would you comment on the value of LDRD research?

Would you comment on the value of LDRD research?

Answer. (General Gioconda) We believe that LDRD research does return substantial value to the taxpayer. First and foremost, it plays a critical role in ensuring the scientific and technical vitality of the laboratories, which support the current and future needs of the national security missions. The Stockpile Stewardship Program (SSP), in the absence of nuclear testing, is a major challenge, requiring the laboratories to remain at the cutting edge in relevant scientific fields. LDRD has helped the scientific foundation for SSP (e.g., massively parallel computing for ASCI, use of lasers for material processing, high explosives research, and proton radiography) and has enabled the laboratories to attract the high caliber staff needed to meet these challenges.

Answer. (Dr. Gottemoeller) Our Nonproliferation and Verification R&D program conducts applied research, development, testing, and evaluation of science and technology for strengthening the U.S. response to national security threats posed by the proliferation of nuclear, chemical, and biological weapons and diversion of special nuclear material. Through the LDRD process, the laboratories pursue basic or high risk research that is the wellspring of many of the concepts that are subsequently supported by our program, but which at the outset are not mature enough to be funded in a directed research and engineering program. Limiting LDRD to four percent reduces the pool from which successful research concepts may arise to feed our future applied research needs.

Question. Do you feel that LDRD research returns value to the taxpayer?

Answer. (General Gioconda) LDRD investments at the three DP laboratories have a proven track record of high returns to the taxpayer:

—Over 25 percent of new knowledge, as measured by peer-reviewed publications;
—Over 30 percent of useful new technologies, as measured by patents granted;
—Over 40 percent of new science and technology workers, as measured by the participation of students and recent doctoral recipients on LDRD projects; and
—Over 60 percent of R&D 100 Awards, many in partnership with industry.

Answer. (Dr. Gottemoeller) I believe the taxpayer gets a very good return on the LDRD investment. In addition to being the basic research source of many of our innovative, operationally oriented development projects, the LDRD program is a magnet for new, young scientists to pursue innovative concepts that push the boundaries of science and technology. The six percent level of LDRD support in past years was believed to be an appropriate balance between the funding for basic research concepts and our program of directed research on national security and nonproliferation issues. We believe that six percent should be reinstated.

BN–350 SHUT-DOWN

Question. I understand that DOE's program to secure the spent fuel from the BN–350 breeder reactor in Kazakhstan has been successful so far. Argonne National Laboratory has been assisting in the safe shutdown of the reactor by transferring experience gained in the shutdown of the EBR–II reactor in Idaho and in designing a system to remove radioactive cesium from the reactor coolant. I understand that Kazakhstan has decided to shut down this reactor permanently.

What is the current U.S. role at the BN–350 with respect to permanent shutdown of the reactor?

Answer. In April 1999, Kazakhstan announced its intention to permanently shut down the BN–350 breeder reactor located in Aktau, Kazakhstan on the eastern shore of the Caspian Sea. Since that time, the Office of International Nuclear Safety and Cooperation (NN–30) has been assisting Kazakhstan with immediate safety and decommissioning issues. In December 1999, Secretary Richardson and the Kazakhstan Minister of Energy, Industry and Trade signed an Implementing Arrangement that formalizes the U.S. intent to assist in the decommissioning of the reactor. This assistance will include joint development of a shutdown plan that will be peer-reviewed under the auspices of the IAEA. Upon completion, the plan will be used by Kazakhstan to solicit technical and financial assistance other nations and international organizations.

The technical focus of the U.S. assistance will be to ensure that the shutdown of the reactor is irreversible. This will be accomplished by decontaminating, draining, and deactivating the reactor's highly radioactive sodium coolant. These actions will be performed using technologies and procedures developed by Argonne National Laboratory at EBR–II.

NUCLEAR SAFETY CENTERS

Question. Argonne West personnel are involved with two joint centers—the Russian International Nuclear Safety Center and the Kazakhstan Nuclear Technology Safety Center—that were established with the goal of enhancing the nuclear safety infrastructure in each country. The work of the safety centers addresses nuclear safety through activities such as providing training on the use of nuclear safety computer codes, developing safety procedures, and transferring knowledge gained from nuclear operations around the world.

Would you comment on the role the centers have played in enhancing nuclear safety in these countries?

Answer. The International Nuclear Safety Centers in Russia, Kazakhstan and the United States have made significant contributions to nuclear safety. The centers currently carry out collaborative activities that support plant-specific safety assessment projects and promote the development of a sustainable nuclear safety infrastructure in Russia and Kazakhstan.

The Russian International Nuclear Safety Center (RINSC) is chartered as a separate organization within the Russian Ministry of Atomic Energy (Minatom). However, essentially all Russian institutes, such as the Kurchatov Institute, the Russian Academy of Sciences' Nuclear Safety Center (IBRAE), and GAN technical center, are official members of the Nuclear Safety Center. Minatom provides RINSC with supporting funds as well as the office space. An important element in maintaining the competence of the Russian center is its direct connection with the corresponding centers abroad, in particular the Argonne center.

In fiscal year 2000, planned activities at the Center include:

—Safety analysis computer code management and configuration control. The Russian Federation International Nuclear Safety Center (RINSC) has been designated as the official repository of U.S. safety analysis code technology. The U.S. provides computer codes to RINSC that are used for nuclear safety work concerning individual nuclear power plants. From RINSC, U.S. safety analysis codes are distributed, with the appropriate configuration controls, to Russian users in other institutes and organizations. The Center maintains and controls the Russian version of the codes, as well as the manuals on code use.

—Management of nuclear safety analysis computer code validation. Russia, with U.S. help, is preparing safety analyses of several nuclear power plants. The application of U.S. safety analysis codes to Soviet-designed reactors requires an extensive validation process, requiring applicable experimental data. RINSC is managing this project because of its established relationship with all Russian institutes involved in this process. Through the technical institutes belonging to RINSC, it is able to access needed experimental data and establish the bases for validated codes. Development and maintenance of the Russian safety analysis data bank. RINSC maintains a nuclear data base for use in safety analysis.

Nuclear power plants and their supporting organizations need analytical information from the data bank in order to carry out in-depth safety assessments. Of particular importance are basic data on material properties.

—Development of technical basis for accident management. While design basis safety and risk assessments are plant specific, the general technical basis for management of severe accidents is applicable for all reactors of a given type. RINSC, in coordination with several Russian institutes, is developing this technical basis for the Russian nuclear power plants.

—Archiving and distribution of safety and risk analysis results. The quantitative results of the safety assessment projects are maintained in a database and distributed by RINSC on an as-needed basis to nuclear power plants. This ensures the widest possible distribution and application, with the necessary quality control, of the DOE-supported safety assessments.

The operation of RINSC has been quite successful despite its limited budget. RINSC was tasked by Minatom to develop the first ever Russian Nuclear Safety Research Plan. This plan received a favorable international review by nuclear safety experts under the auspices of the OECD/Nuclear Energy Agency. RINSC continues to contribute to the international database on nuclear reactor materials, including some valuable high-temperature data previously unavailable in the West. Some of these data (e.g, high temperature properties of Zirconium) have already found use in improving the accuracy of U.S. severe accident analysis computer codes.

The Kazakhstan Nuclear Technology Safety Center was created by a joint U.S.-Kazakhstan agreement, signed by the U.S. Secretary of Energy and the Kazakhstan Minister of Science in 1997. The purpose of the Center is to provide expertise and infrastructure for nuclear safety analysis. The focus of the activity is the BN–350 fast breeder reactor in Aktau, Kazakhstan. To date, the Center has conducted safety analysis review (SAR) workshops on spent fuel packaging and failed fuel packaging. Similar workshops are planned for decommissioning activities such as: spent fuel transportation, cesium decontamination, sodium coolant draining and deactivation, and liquid and solid waste management. The Center also has hosted shutdown planning conferences that included DOE and NRC personnel as well as Kazaki personnel from several ministries and from BN–350 plant management. In addition, the Center's Deputy Director has observed aspects of the EBR–II shutdown project in Idaho so that these can be applied to the BN–350 project. The Center also addresses nuclear safety issues for the six nuclear research reactors and related facilities within Kazakhstan that were designed and supported previously by institutes located in Russia.

LONG-TERM NONPROLIFERATION PROGRAM FOR RUSSIA

Question. The Administration has proposed a new program on long-term nonproliferation in the Russian Federation, in exchange for certain concessions by the Russians related to reprocessing and assistance to Iran's program.

What is the status of your negotiations with the Russian Federation, and how confident are you that the desired concessions will be granted?

Answer. Negotiations are ongoing, and we are making good progress on developing a Joint Statement outlining the intention of the two sides to move forward with this program, including a moratorium on further accumulation of separated civil plutonium resulting from the reprocessing of civil power reactor fuel in Russia. Regarding Russia's nuclear cooperation with Iran, we are currently in intense and high-level discussions with Russia to try to resolve these concerns. The Russians understand that the implementation of the R&D program within the new Long-Term Nonproliferation Initiative is conditioned on the resolution of these issues. In addition, we, and other parts of the Administration, are having detailed technical discussions with MinAtom on the implementation of Russian export control laws, with a view towards improving Russia's compliance with its undertakings regarding nuclear transfers to Iran.

INTERNATIONAL CENTERS FOR ENVIRONMENTAL SAFETY

Question. DOE signed a bilateral agreement with Russia to collaborate on environmental clean-up technologies through establishment of the International Center for Environmental Safety. This Center has existed on paper for nearly two years, but DOE's financial support has been only about $500,000 a year.

Is there a chance this Center could get a pledge of increased financial support from DOE in fiscal year 2001?

Answer. The International Center for Environmental Safety (ICES) was established jointly, in June 1999, by the Russian Federation Ministry of Atomic Energy (MinAtom) and DOE. MinAtom funded an office in Moscow for the Center, hired

core personnel, and assigned it the responsibility of coordinating environmental safety projects at MinAtom industrial sites. In fiscal year 1999, DOE provided $100,000 to INEEL to help establish the Center. DOE had planned to provide additional support in fiscal year 2000, but was unable to do so due to a 50 percent reduction in the International Nuclear Safety Program budget and restrictive language in the Appropriation Committee Conference Report.

DOE still believes that, as a coordinating activity, the Center would improve the efficiency of environmental efforts at MinAtom industrial sites and that the U.S. could benefit from collaboration on legacy environmental problems. For example, Russia has conducted criticality safety benchmark experiment projects that could improve operational safety with spent nuclear fuels at DOE facilities. Similarly, Russian experience in modeling the subsurface flow of contaminants could improve assessment and resolution of problems at DOE sites. However, unless funds are appropriated and restrictive language removed, no further funding of ICES is planned.

FISSILE MATERIALS DISPOSITION

Question. The DOE Fissile Materials Disposition program has been working with Russia to help develop MOX fuel for the BN–600—a breeder reactor in Russia. At last year's hearing, I raised this issue with DOE's program director Laura Holgate, and she stated that "we have an active R&D program underway in Russia to work on converting the BN–600 reactor to use MOX fuel, and a key element of that will be removing the breeder blankets that actually create the plutonium, and I am convinced that there is a cooperative role for Argonne West's experience as we move forward with the Russians on that project."

However, since that response, very little progress has been made in MOX fuel development, and essentially no progress has been made on converting the BN–600 breeder blanket to a stainless steel reflector. Also, no progress has been made in identifying a storage location for the spent fuel and blanket assemblies that would have to be removed from the reactor during conversion to MOX.

Can you please comment on the status of the R&D program and the blanket removal?

Answer. A significant volume of work continues with regard to the development of mixed oxide (MOX) fuel for the BN–600 fast reactor. The Russian Research Institute of Research Reactors (RIAR) fabricated three vibro-compacted (VIPAC) powder MOX lead test assemblies for the BN–600 using plutonium metal from Russian weapons components. The experimental subassemblies will begin to be irradiated in the BN–600 restart following a May maintenance and refueling shutdown. The Argonne National Laboratory is participating in meetings to discuss accelerating the path forward for the VIPAC MOX option. As an alternative, the U.S. is also studying the possibility of fabricating BN–600 MOX fuel in pellet form at the Mayak facility.

Work continues with Russia with regard to the removal of the irradiated breeding blanket in the BN–600 reactor. Russia has completed the technical designs for a stainless steel reflector subassembly and a boron shield subassembly—two components required for blanket replacement. However, proceeding with the blanket replacement will require Russia to make a decision for the location of a dry storage facility for both spent MOX fuel and irradiated breeding blanket subassemblies. Dry spent fuel storage technology used at the Radioactive Waste Storage Facility at the Argonne-West site is one of the possible technologies under consideration.

NAVAL REACTORS

Question. Is the President's budget request for Naval Reactors sufficient to meet the Navy's commitments to the State of Idaho under the clean-up settlement agreement?

Answer. Yes, the President's budget request for Naval Reactors is sufficient to meet the Navy's commitments in the 1995 Idaho agreement. The Navy has met all its commitments under the agreements to date, and expects to continue to satisfy the terms of the agreement in fiscal year 2001 and beyond.

SUBCOMMITTEE RECESS

Senator DOMENICI. We stand in recess.

[Whereupon, at 11:40 a.m., Tuesday, March 28, the subcommittee was recessed, to reconvene subject to the call of the Chair.]

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2001

TUESDAY, APRIL 11, 2000

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 9:15 a.m., in room SD–124, Dirksen Senate Office Building, Hon. Pete V. Domenici (chairman) presiding.

Present: Senators Domenici, Gorton, McConnell, Craig, Reid, Murray, and Dorgan.

DEPARTMENT OF ENERGY

OFFICE OF SCIENCE

STATEMENT OF DR. JAMES DECKER, ACTING DIRECTOR

OFFICE OF ENERGY AND RENEWABLE ENERGY

STATEMENT OF DAN REICHER, ASSISTANT SECRETARY OF ENERGY

OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY

STATEMENT OF BILL MAGWOOD, DIRECTOR

STATEMENT OF SENATOR SLADE GORTON

Senator GORTON [presiding]. Well, the Chairman is delayed, and I must preside at another hearing at 9:30. But rather than keep the witnesses waiting or Senator Dorgan waiting, perhaps it would be well to start.

The Chairman has a detailed opening statement. He may want to give it later, but we will place it in the record.

The jurisdictions of the various witnesses are of considerable interest to me as well, and I suspect to the Vice President and to Senator Dorgan as well.

Do you have any opening statement that you would like to make?

STATEMENT OF SENATOR BYRON L. DORGAN

Senator DORGAN. Well, Mr. Chairman, thank you. Apparently this is a morning where all committees are holding all of their subcommittee hearings. And I think I have four that are starting at either 9:00 or 9:30 today. So we are all under the same circumstance.

This is an important programmatic area. And in an interesting way, it is a timely area to be discussing because of the actions of the OPEC countries and the spike up in gas prices. When we talk now about renewal energy technologies and extending America's energy supply through new technologies, I think it is exactly what we ought to be talking about. I have had an opportunity to work with Mr. Reicher and others on a range of issues.

Because you bicycled through North Dakota at one point, Senator Gorton, you probably know this. But North Dakota is the Saudi Arabia of wind energy.

Senator GORTON. Fortunately the winds were in the right direction.

Senator DORGAN. As I understand it, you were biking from west to east——

Senator GORTON. Yes.

Senator DORGAN [continuing]. Which would be logical if you wanted a tail wind in our State.

NORTH DAKOTA WIND ENERGY POTENTIAL

But if you look at wind energy potential in our country, North Dakota really is the Saudi Arabia of wind energy potential, but it exists in a fair number of areas, including the State of Washington. Wind energy and biomass and a whole range of opportunities exist. We have programs and initiatives in the Federal Government that I think are exciting. And I know they are niche areas, but I think they are exciting.

And if we make the right investments and take this opportunity during this period of a discussion about being captive or dependent on energy supplies from foreign sources, we can make the right investments and extend our energy supplies by developing what some people call green power and others call renewable energy sources. Abundant energy gathered from self-renewing resources makes a great deal of sense in our country.

And so I came by today just to say that as we begin looking at the resources we devote to this, I am especially interested in wind energy. And I especially want to keep, if we can, the administration's recommendation on wind energy investment. But I want to work with other members of the subcommittee, including the chairman, on a range of these projects.

So thank you very much.

Senator GORTON. Senator Craig? We just got started.

Senator CRAIG. I am delighted to be here and I will ask questions of our first panel.

Senator GORTON. Fine.

Senator CRAIG. Thank you.

Senator GORTON. And if the witnesses have a preferred order—I have Dr. Decker first. If you all wish to change the order, it is okay with us.

And of course, as always, your formal written statements will be included in the record of the hall. So we would appreciate you summarizing.

Dr. DECKER. Mr. Chairman and members of the subcommittee, thank you for the opportunity to——

Senator GORTON. Here is the Chairman. Just getting them started.

STATEMENT OF SENATOR PETE V. DOMENICI

Senator DOMENICI [presiding]. Hello, everybody. I am very sorry. I guess everybody knows I am sorry, though.

Good morning. Today the subcommittee is going to continue its review of the Department of Energy's budget request for fiscal year 2001 in two separate panels.

The first panel we will hear, Mr. Dan Reicher, Assistant Secretary for the Office of Energy Efficiency and Renewable Energy; Mr. Bill Magwood, Director of the Office of Nuclear Energy, Science and Technology; followed by Dr. James Decker, Acting Director of the Office of Science.

In the second panel, we are going to hear from Dr. Carolyn Huntoon, Assistant Secretary for the Office of Environmental Management, and Dr. Ivan Itkin, who is the Director for the Office of Civilian Radioactive Waste Management.

First of all, I thank you all very much for the flexibility that you have shown us in accommodating to the committee's schedule. As many of you know, the subcommittee had to cancel last week's hearing because the ranking member and I were on the Senate floor with a budget resolution. And it was impossible to be both places. I look forward to getting back into the appropriations matters today.

SOLAR AND RENEWABLE BUDGET REQUEST

The solar and renewable budget request for next year is $409.5 million, a 32-percent increase over the current year. Meanwhile, just my own observation, the nuclear energy budget request for next year is $306 million, an increase of 7.4 percent over the current year.

I remain very concerned about the relative investments the Department is proposing in these two areas. According to a 1997 study, the U.S. Federal R&D investment per thousand kilowatts was approximately 5 cents per kilowatt for nuclear and 4,800 per kilowatt for wind, 17,000 per kilowatt for photovoltaic.

Despite the considerable investment this country has made in non-hydro renewables over the last several decades, the technology remains rather uncompetitive on the large scale and today contributes less than one percent of the U.S. electrical power. I think we have to be realistic.

And while we commend the director, Mr. Reicher, who has taken over this part of the budget and, I must say comparably speaking, is running a much, much better department than ever before, the facts still kind of shine rather brightly on this issue.

OFFICE OF SCIENCE BUDGET REQUEST

The budget request for the Office of Science for next year is $3.51 billion, a 12-percent increase. Hopefully we are going to be able to accommodate that, and maybe a little more, in our appropriation process.

ENVIRONMENTAL MANAGEMENT BUDGET REQUEST

The environmental management request is $6.738 billion, a 6.9-percent increase. While this program is producing visible progress at a number of sites, many challenges remain in developing clean-up technologies and managing costs for these clean-ups. Next year is a very critical year for the Office of Civilian Radioactive Waste Management as it prepares to make and issue a final AIS and a formal site recommendation to the Secretary on the Yucca Mountain site.

I ask that you be as brief as you can, but we clearly want to hear from you. Your prepared remarks will be made part of the record as if read.

Any Senator have any comments?

Senator GORTON. Well, everyone else has done their opening statement. I had just recognized Dr. Decker when you came in.

Senator DOMENICI. Thank you very much. Let us proceed on that basis.

Dr. Decker.

STATEMENT OF DR. JAMES DECKER

Dr. DECKER. Mr. Chairman and members of the subcommittee, thank you for the opportunity to testify before you today on the fiscal year 2001 budget request for the Office of Science. Before I begin, let me thank you, Mr. Chairman and members of the committee, for the committee's strong support for our research programs in past years.

The Office of Science supports basic research that underpins the science, energy, environment and national defense missions of the department. It is the major supporter of fundamental research in the physical sciences and plays an important and unique role in life sciences, environmental sciences, mathematics, computer sciences and engineering sciences.

The Office of Science also plays an essential role in the Nation's scientific infrastructure by constructing and operating major scientific facilities, such as accelerators, light sources and neutron sources. Each year these facilities serve more than 15,000 scientific users from all research sectors, academia, industry and federal laboratories.

ACCOMPLISHMENTS

The past year has been a very productive one for the Office of Science. We have completed a number of new research facilities and completed upgrades to existing facilities on time and within budget. It has also been a year of exciting science. I will mention two examples that illustrate the scientific breath of our research.

The Lawrence Berkeley National Laboratory Group has found evidence that the expansion of the universe is speeding up, suggesting the presence of a new force. In genomic research, we have completed sequencing the three million base pair of Deinococcus radiodurans, nicknamed Conan the Bacterium.

Since it can survive 600 times more radiation than the human being, this should provide insights into mechanisms for DNA repair

and may show us how to engineer Conan into a workhorse for helping to clean up some of DOE's most difficult mixed waste problems.

NANOTECHNOLOGY

In the fiscal year 2001 budget request, there are several areas of exciting and challenging scientific opportunities for the future that I would like to highlight. First, nanoscale science, engineering and technology. This area of basic science will allow for the creation of new materials tailored for specific uses, one atom at a time. The resulting materials will have new or greatly improved properties. The impact of Nano technologies could equal that of the transistor.

ADVANCED SCIENTIFIC COMPUTING RESEARCH

Second, advanced scientific computing research. Every scientific program supported by the Office of Science is faced with enormously complex problems. They can only be addressed through computational models. Such models are already essential tools for our research, but our current computers are not powerful enough to address many of our most important problems.

Computers that can are rapidly becoming available. Industry can now supply super-computers ten times faster than those that are now available to our civilian scientists. And far more powerful computers will be available very soon.

But these are very complex machines. Producing the unique software and mathematical models that will make them useful, for our scientific programs requires a focused program of research and development. For a relatively modest investment, we can begin to provide all of our science programs with a powerful tool for basic research.

MICROBIAL CELL

Third, understanding the microbial cell. Microbes are amazing little chemical factories. The revolutionary tools developed in the life sciences over the last few years, such as genetic sequencing technologies, give us the opportunity to determine how they work and to modify them to work for us in areas such as bioremediation, carbon sequestration and sustainable energy production.

BIOENGINEERING

Fourth, bioengineering. In bioengineering we will take advantage of our unique resources to support innovative program research in nano medicine, bio materials and molecular biology.

In addition to the enhanced activities just noted, the 2001 request will provide for a wide range of important scientific activities in each of our programs and will support increased investment and existing user facilities.

SPALLATION NEUTRON SOURCE

In closing, I would note the substantial progress made on the Spallation Neutron Source. On December 15 we broke ground and began construction of the project. R&D and design activities are

proceeding on schedule. Last month the Office of Science conducted its regular semiannual review of the project.

While this review examined all aspects of the project, the review committee was specifically asked to examine whether the project's cost and schedule baseline are consistent with the President's 2001 budget request. The review committee judged that this Spallation Neutron Source project is making good progress and that it can be completed on schedule and within budget.

The budget request for the Office of Science balances support for our existing programs and facilities and new investments and tools, such as the Spallation Neutron Source and advanced computational modeling, and in promising new areas, such as nano science. It provides a strong basis for scientific progress and all the disciplines that we support.

And I will be pleased to answer any questions that you may have.

[The statement follows:]

PREPARED STATEMENT OF DR. JAMES DECKER

Mr. Chairman and Members of the Subcommittee: Thank you for the opportunity to testify on behalf of the Office of Science (SC) of the U.S. Department of Energy (DOE). The fiscal year 2001 budget request for the Science appropriation supports: Advanced Scientific Computing Research, Basic Energy Sciences, Biological and Environmental Research, Fusion Energy Sciences, High Energy Physics, Nuclear Physics, Energy Research Analyses, Multiprogram Energy Laboratories-Facilities Support, and Science Program Direction. The Technical Information Management program budget request is located within the Energy Supply appropriation.

The DOE budget for fiscal year 2001 requests $3,151.1 million for SC programs in the Science Appropriation and $9.3 million for the Technical Information Program in the Energy Supply Appropriation. The activities supported by this budget will build on SC's achievements in the physical and biological sciences, leverage our current investments for new opportunities, and permit new investments in individual research projects at our national laboratories and research universities across the country. The Department's science programs and infrastructure advance basic research and provide the technical foundations and resources for DOE's applied missions in national security, energy, and environment.

This request will enable SC to pursue new and challenging scientific opportunities in nanoscale science, engineering and technology to allow for the creation of new materials one atom at a time; advanced scientific computing research to advance all of our research programs by taking advantage of the prodigious increases in computing power that will occur in the next few years; molecular level understanding of microbes to harness nature's remarkable chemical factories; and bioengineering to use the science and engineering capabilities of our programs for new breakthroughs. In addition, the ongoing programs representing our core competencies will remain strong and vigorous.

The requested funding will allow Fermilab to initiate Run II of the Tevatron Collider using the new Main Injector, which will increase its beam intensity by up to a factor of ten, and the correspondingly upgraded the Collider Detector at Fermilab (CDF) and the DO detector. Run I discovered the top quark and Run II will allow a search for the origin of mass and new symmetries in the fundamental interactions of matter. Late in fiscal year 2000, a major new nuclear physics facility at the Brookhaven National Laboratory called the Relativistic Heavy Ion Collider (RHIC) begins colliding gold nuclei to create a form of matter that has not existed since the Big Bang and the first results are expected in fiscal year 2001. Encouraging hints of this "quark-gluon plasma" have recently been detected at CERN. The B Factory at Stanford Liner Accelerator Center (SLAC), designed to study the subtle matter-antimatter asymmetry in our matter-dominated world, will have its first full year of running at full design luminosity. Major new results on the depleted neutrino signal from the sun will be provided by the Sudbury Neutrino Observatory (SNO) detector, located 2 kilometers underground in Sudbury, Ontario, Canada. The request will also allow SLAC to begin the final design and prototyping for Gamma Large Area Space Telescope (GLAST). This exciting new initiative between DOE and NASA combines the sophisticated experimental techniques of our high energy

physics programs with the expertise of NASA in space to enhance our ability to solve the mysteries of the universe.

This request will also permit SC to increase funding for its most heavily used facilities, continue construction of the Spallation Neutron Source, and continue our participation in the Large Hadron Collider. The coming year promises to be an exciting and productive one for the programs that use our major facilities. Our synchrotron radiation light sources and neutron sources will run at maximum capacity to serve their large and growing multidisciplinary user communities; every one of our major high-energy and nuclear physics facilities has just been upgraded and will be available to serve these communities; the National Spherical Torus Experiment will be operational with its neutral beam heating system; and our computing facility, National Energy Research Scientific Computing (NERSC), will undergo a major upgrade to enable multi-teraflops operation. The restructured Fusion Energy Science program will: pursue the physics of advanced tokamaks; launch a new competition for innovative confinement concepts; continue our heavy ion beam accelerator research; and enhance our support for plasma science in such areas as plasma processing and plasma chemistry.

Continued leadership in science and technology is a cornerstone of our nation's economic prosperity and growth. Information technology alone accounts for one third of U.S. economic growth and is creating jobs that pay almost 80 percent more than the average private-sector wage. Many of the technologies that are fueling today's economy, such as the Internet, build upon government investments, such as the SC ESnet, in the 1960's and 1970's. The Department of Energy, and its predecessor agencies, have been the proud sponsor of science-driven growth through the combined efforts of the national laboratories, 70 Nobel Laureates, and thousands of outstanding university and industry based researchers nationwide. As we begin the new millennium, SC reaffirms its commitment to these quality investments in scientific programs and tools to enable tomorrow's advances.

OUR ACCOMPLISHMENTS AND RECENT SUCCESSES

SC is the nation's major supporter of fundamental research in the physical sciences. It is also among the nation's largest supporters of fundamental research in mathematics and computing, engineering, and environmental sciences. The SC programs fund research at 250 colleges and universities located in 49 states. The inclusion of research activities at this large number of academic institutions is a vital part of the SC programs. These academic scientists and their students are funded through individual peer-reviewed grants and as members of peer-reviewed research teams involving investigators from both national laboratories and universities.

SC also provides the major support for 32 major scientific user facilities, which together host more than 15,000 users annually from all research sectors. University-based scientists are among the principal users of these facilities. New research capabilities came on line at the Combustion Research Facility, the Continuous Electron Beam Accelerator Facility (CEBAF) at Thomas Jefferson National Accelerator Facility (TJNAF), and the B-factory at SLAC during fiscal year 1999 and fiscal year 2000. Projects and other major facilities completed on time and within budget include: the Relativistic Heavy Ion Collider (RHIC), the U.S./Canadian Sudbury Neutrino Observatory (SNO) detector, the National Spherical Torus Experiment (NSTX), the Fermilab Main Injector, and the Joint Genome Institute's (JGI) Production Sequencing Facility. Ground was broken on December 15, 1999, for the Spallation Neutron Source (SNS), SC's newest construction start.

Each year, hundreds of principal investigators funded by SC win dozens of major prizes and awards sponsored by the President, the Department, the National Academy of Sciences, the National Academy of Engineering, and major professional scientific societies. The awards have included: the Nobel Prize for Chemistry and Physics, the National Medal of Science, Presidential Young Investigator Award, Enrico Fermi and E.O. Lawrence awards, National Science Foundation Career Award, R&D 100 awards, Discover Magazine Awards, the Federal Laboratory Consortium Award, the Gordon Bell Prize and the Fernbach Award, IBM's Supercomputer Award, and many others.

This research portfolio supports the goals of the Department and the Administration while advancing science and contributing to U.S. economic growth. Presented below are recent program accomplishments. The selected program highlights are representative of the broad range of research supported in SC. These highlights demonstrate the discovery of new knowledge to challenge our imagination, the rapidity with which new knowledge often can be incorporated into other scientific dis-

ciplines and into the commercial sector, and the great potential of new knowledge for future impacts in energy production and use.

Advanced Scientific Computing Research Accomplishments

Today's high performance scientific computations rely on high performance, efficient libraries of numerical linear algebra software. These libraries, which are the core of numerical efforts in the solution of differential and integral equations LINPACK, EISPAC, LAPACK, SCALAPACK are the direct result of decades of DOE funding of basic research in this area. These libraries are used by thousands of researchers worldwide and are a critical part of the world's scientific computing infrastructure.

The Transmission Control Protocol (TCP) part of TCP/IP (Internet Protocol) is responsible for ensuring that packets of information traveling over the internet arrive at their destination. In 1987, as DOE and the other federal agencies were interconnecting their networks to form the core of the Internet, critical parts of the infrastructure began to fail. There was concern that this represented a fundamental flaw in the TCP/IP architecture; however, a researcher at LBNL applied ideas from fluid flow research to understand the problem and develop a solution. This new TCP algorithm was incorporated in virtually every commercial version of Internet software within six months and enabled the Internet to scale from a small research network to today's worldwide infrastructure.

To meet the nation's energy needs, the United States oil and gas industry must continue to advance the technology used to extract oil and gas from both new and old fields. Computer scientists at Argonne National Laboratory, in collaboration with petroleum engineers at the University of Texas at Austin, have recently developed a software package capable of simulating the flow of oil and gas in reservoirs. These codes, which are based on software tools designed at Argonne, are able to run on a variety of computer platforms. The software codes will enable the oil and gas industry to lower exploration and drilling costs and enhance the yield of oil from new and old fields alike.

The Advanced Scientific Computing Research program is pioneering national collaboratories which link researchers at their home institutions with the instruments at the SC user facilities to change the way science is being done at these facilities.

The small Laboratory Technology Research subprogram ($15.7 million) supported research projects that received five R&D 100 Awards in fiscal year 1999.

Basic Energy Sciences Accomplishments

As part of a nationwide program in high-resolution electron-microscopy applied to fundamental materials sciences research, a new imaging technique was developed that achieved the highest resolution image of a crystal structure ever recorded, resolving adjacent columns of silicon atoms separated by a scant 0.78 angstroms (3 billionths of an inch). The precise atomic-scale structure of a material controls the performance of materials for semiconductor devices, superconductors, and a host of other applications. Combined with improved electron imaging optics currently under development, this result promises to revolutionize the atomic-scale understanding of materials.

As part of its stewardship responsibility for neutron science, the Basic Energy Sciences (BES) program made substantial investments in human and facility resources for neutron science. In addition to the construction of the Spallation Neutron Source, all BES neutron science facilities are being upgraded and/or provided additional funds to increase hours of operation to enable a major increase in the national neutron science effort. Finally, a neutron science summer school is being supported to give students hands-on experience with the techniques of neutron scattering.

As part of a major program to theoretically predict and then synthesize new materials with unusual chemical and physical properties, a new fullerene species, C_{36}, has been synthesized and produced in bulk quantities for the first time. Fullerenes or "buckyballs" are hollow clusters of carbon atoms. They have been studied extensively since the Nobel prize-winning discovery of C_{60} in 1985 (supported by BES). C_{36} is the smallest fullerene discovered to date and is characterized by unusual and potentially very useful properties. For example, in contrast to C_{60} molecules, which interact only very weakly with one another, C_{36} molecules stick together—hence the nickname "stickyballs."

A powerful new instrument completed at the Combustion Research Facility promises to provide new information about how molecules dissociate when given enough internal energy. Understanding such processes is critically important for combustion, because, at the high temperatures of combustion, dissociation occurs in a vari-

ety of ways that are difficult to observe, model, and predict. With this new instrument, measurements are made one molecule at a time, making this a tool of unrivaled power for the validation of predictive models and theories of chemical reactions.

It has long been recognized that tools and concepts developed in the physical sciences can revolutionize the life sciences. One need only consider the impact of x-ray synchrotron radiation and MAD (multiple wavelength anomalous diffraction) phasing on macromolecular crystallography; both were developed within the SC program. In fiscal year 1999, many of the program highlights illustrate the rapidity with which advances in the physical sciences are impacting the life sciences. Two such examples are new techniques of nuclear magnetic resonance (NMR) that are being used to study the molecular structures of solid protein deposits implicated in brain diseases such as Alzheimer's Disease and BSE (Mad Cow Disease), and a nano-laser device that has been shown to have the potential to quickly identify a cell population that has begun the rapid protein synthesis and mitosis characteristic of cancerous cell proliferation.

Biological and Environmental Research Accomplishments

Each year, Science Magazine honors a "Breakthrough of the Year" and nine additional major discoveries in fields that span the scientific disciplines, from the edgy dance of subatomic particles to the biological wizardry that imprints memories. Genomics was again included for 1999. Genomics is one of today's most exciting and high profile fields in biology and DOE supports the full range of genomic research from microbes to the Human Genome. For example, SC researchers have completed sequencing the entire 3 million base pair genome of "Conan the Bacterium"-*Deinococcus radiodurans*. This DNA sequence information should provide additional insights into the astonishing mechanisms for DNA repair in *Deinococcus radiodurans* in addition to improving opportunities for engineering *Deinococcus radiodurans* into a potential workhorse for helping cleanup some of DOE's most troublesome waste problems.

Deinococcus radiodurans cannot normally degrade solvents that are part of the mixed wastes at many DOE sites. A team of SC-funded scientists at the Uniformed Services University for the Health Sciences (USUHS) in Bethesda, Maryland has transferred genes that code for enzymes that degrade toluene and related solvents from *Pseudomonas putida* into *Deinococcus radiodurans*. The new *Deinococcus radiodurans* can degrade toluene and toluene-related solvents. The engineered *Deinococcus* could also survive levels of toluene and trichloroethylene that would normally dissolve most other bacteria, suggesting that these engineered microbes might survive in radioactive and solvent containing mixed wastes and degrade the solvents.

The DOE Joint Genome Institute's Production Sequencing Facility in Walnut Creek, California will complete a working draft of human chromosomes 5, 16, and 19 by March 2000. This is part of SC's contribution to the international effort to sequence the entire human genome by 2003. This working draft represents roughly 90 percent of the entire sequence of these three chromosomes completed to 99 percent accuracy. This draft sequence, together with drafts produced by other sequencing centers around the world, will open the floodgates of biological information to scientists and reduce the time and effort needed to complete the entire high quality sequence. SC's effort to complete the finished sequence for chromosomes 5, 16, and 19 is scheduled for completion by October 2001.

A massively parallel version of the Community Climate Model (CCM3) was developed by a multi-institutional partnership that includes several DOE laboratories, the National Center for Atmospheric Research (NCAR), and university research groups. CCM3 runs on a massively parallel computer and performs coupled climate model simulations. Highly optimized atmosphere, ocean, and sea ice general circulation model codes that run effectively on massively-parallel scientific supercomputers have been completed and tested for use in climate change studies. The Parallel Climate Model (PCM), which more accurately represents the physical ocean, sea ice and atmosphere motion, has been tested on three different parallel supercomputers. This is a significant step in developing the next generation of climate models.

Brain imaging studies using positron emission tomography (PET) show that methamphetamine is toxic to the brain and this is associated with long-term memory loss and motor impairment. Studies are in progress to determine if recovery occurs on drug withdrawal.

Fusion Energy Sciences Accomplishments

The tearing and reconnection of magnetic field lines is of fundamental importance in many areas of plasma physics, including fusion science. Newly developed labora-

tory experiments at the California Institute of Technology, Swarthmore, and the Princeton Plasma Physics Laboratory have led to significant advances in the understanding of this phenomenon. This is of particular importance in the eruptions of energetic bursts from the surface of the sun, which, in turn affect radio and satellite communications.

Considerable progress has been made in areas such as the macroscopic equilibrium and stability of magnetically confined plasmas, and turbulence and transport in tokamak plasmas. Software and hardware have been developed to allow remote collaborations on a wide variety of fusion experiments in the United States and abroad.

Plasma turbulence increases energy transport and thereby limits magnetic confinement. There have been recent attempts to compare plasma transport phenomena with avalanche or "sand pile" transport models. Although plasmas are fluids, Self-Organized Criticality (SOC) models that are used to simulate a wide variety of natural phenomena such as earthquakes, avalanches, etc., describe some nonlinear aspects of plasma turbulence. Tokamak measurements are providing information about the size and frequency of transport events, thus improving comparisons with theoretical avalanche models.

High Energy Physics Accomplishments

DOE is entering into an exciting and expanding partnership with NASA in the area of Particle Astrophysics. Research and development for the Alpha Magnetic Spectrometer (AMS) and Gamma Large Area Space Telescope (GLAST) experiments has been underway for some time. Preliminary consideration is being given to the SuperNova Acceleration Probe (SNAP) experiment. These experiments, and others that may be proposed, will provide important new information about cosmic rays and the rate of expansion of the universe which will in turn lead to a better understanding of dark matter, dark energy, and the big bang. For example, the AMS flew in a space shuttle payload bay for 10 days in June 1998 and gathered about 100 hours of data. The data provide a far more comprehensive and accurate description of the global distribution and movement of cosmic rays than available previously. Researchers analyzing this global data have found intriguing and unexpected information about cosmic rays and how they interact with the earth's magnetic field.

Charge-Parity (CP) Violation is one of the central problems of subatomic-particle physics. It is arguably the only known subatomic effect for which no clear explanation exists in the Standard Model of particles and their interactions. CP violation is a manifestation of subtle difference between the properties of particles and of antiparticles, it has been postulated (by Russian physicist Andrei Sakharov) to have been responsible for the development, shortly after the Big Bang, of the slight excess of matter over antimatter from which the entire material universe has since evolved. Thirty years of experimental effort to study CP Violation have succeeded in determining only two parameters of the theory—parameters that explain no other known effect. In March 1999, scientists working on Fermilab's KteV experiment announced evidence that established the existence of direct CP Violation beyond reasonable doubt. This is a significant advance in our understanding of this important phenomena. The finding definitively rules out the existing Superweak Theory as the sole source of CP Violation and indicates that the phenomena can be accommodated within the Standard Model.

The observation was made, by the international CDF collaboration working at Fermilab, of the existence and properties of the B meson containing a charmed quark. This discovery completes the theoretically predicted family of B mesons.

Evidence of neutrino mass and quantum mixing was obtained in a U.S.-Japanese experiment with the Super-Kamiokande experiment in Japan. Neutrino beam experiments in Japan and at Fermilab are underway to verify these results.

Nuclear Physics Accomplishments

In fiscal year 1999, observations of two new chemical elements (Z (number of protons)=116 and Z=118) were reported in measurements performed at the Lawrence Berkeley National Laboratory's 88-Inch Cyclotron using the Berkeley Gas-filled Spectrometer (BGS). Continued measurements are planned for fiscal year 2000 and fiscal year 2001.

The Gammasphere, coupled with the Fragment Mass Separator at the Argonne Tandem-Linac Accelerator System (ATLAS) facility at Argonne National Laboratory, provided surprising results on the structure of the Nobelium isotope (^{254} No) showing that nuclear shell structures, which are entirely responsible for the stability of nuclei with charges greater than Z=100, persist up to very high deformation. Other measurements performed at the ATLAS facility have established properties of nuclei and reaction processes that allow for more stringent tests of models for supernova

collapses and improved predictions for chemical element production in stellar burning and supernovae.

National laboratory theorists have found, quite unexpectedly, that effects due to special relativity can explain a previously unexplained symmetry in the low lying states of a large number of atomic nuclei.

In keeping with the Government Performance and Results Act (GPRA), the SC fiscal year 2001 budget request includes program specific goals, strategies, and measures that focus our research activities and ensure continuity with Departmental plans and national goals. The DOE Strategic Plan and Science Strategic Plan outline the vision, goals and strategic objectives that will, through leadership in science and technology, help the DOE to meet its technology driven missions.

LOOKING TO THE FUTURE—FISCAL YEAR 2001

Last year, in the Science Strategic Plan, SC provided a framework for addressing its mission through four science goals:

—*Exploring Matter and Energy*—understanding the building blocks of matter from subatomic particles to living systems;

—*Fueling the Future*—supporting fundamental science for affordable and clean energy;

—*Protecting Our Living Planet*—supporting fundamental science to understand and mitigate the impacts of energy production and use; and

—*Extraordinary Tools for Extraordinary Science*—providing major facilities and tools for the nation's researchers in academia, federal laboratories, and industry.

In fiscal year 2001, new activities that support these goals include nanoscale science, engineering, and technology; advanced computational modeling and simulation; understanding the workings of microbes at the molecular level; applications of science and engineering expertise to problems in the life sciences; increased utilization of scientific user facilities; support for the Spallation Neutron Source and the Large Hadron Collider; and augmentation of the skills of our technical workforce.

Nanoscale Science Engineering and Technology.—In 1959 Richard Feynman delivered a now famous lecture, *There is Plenty of Room at the Bottom—An Invitation to Enter a New Field of Physics.* He challenged his audience to envision a time when materials could be manipulated and controlled on the smallest of scales, when new materials could be fabricated and devices could be designed atom by atom. "In the year 2000," he said, "when they look back at this age, they will wonder why it was not until the year 1960 that anybody began seriously to move in this direction."

Unfortunately, it took longer than Feynman predicted to arrive at the threshold of such complete control of materials. Now, in the year 2000, controlling and manipulating matter at the atomic and molecular scale—which is the essence of nanoscale science, engineering, and technology—has finally become feasible. In the 40 years since Feynman's lecture, instruments have been invented and perfected that enable visualization and control at the nanoscale. Many of these instruments and techniques are contained within SC's collection of scientific user facilities. Theory, modeling, and simulation have also reached the stage at which it is possible to understand and predict phenomena at the nanoscale.

The principal DOE missions in science, energy, defense, and environmental quality will benefit greatly from developments in these areas. For example, nanoscale synthesis and assembly methods will result in significant improvements in solar energy conversion; more energy-efficient lighting; stronger, lighter materials that will improve efficiency in transportation; greatly improved chemical and biological sensing; use of low-energy chemical pathways to break down toxic substances for environmental remediation and restoration; and, better sensors and controls to increase efficiency in manufacturing.

A key challenge in nanoscience is to understand how deliberate tailoring of materials on the nanoscale could lead to novel properties and new functionalities. Examples include: the addition of aluminum oxide nanoparticles that convert aluminum metal into a material with wear resistance equal to that of the best bearing steel; and, novel chemical properties of nanocrystals that show promise as photocatalysts to speed the breakdown of toxic wastes and meso-porous structures integrated with micromachined components that are used to produce high-sensitivity and highly selective chip-based detectors of chemical warfare agents. These and other nanostructures are already recognized as likely components of 21st century optical communications, printing, computing, chemical sensing, and energy conversion technologies.

SC has been a leader in the early development of nanoscale science, engineering, and technology since the 1980s, supporting research and sponsoring workshops to

help establish the importance of nanostructured materials. Because of the confluence of advances during the past decade, SC is well prepared to make major contributions to develop nanoscale scientific understanding, and ultimately nanotechnologies, through its research programs and its materials characterization, synthesis, in-situ diagnostic, and computing capabilities. The DOE and its national laboratories maintain a large array of major scientific user facilities that are ideally suited to nanoscience discovery and to developing a fundamental understanding of nanoscale processes.

New funding in the amount of $36.1 million in fiscal year 2001 is requested for these activities as part of the proposed multiagency National Nanotechnology Initiative. This effort has the following broad goals: (1) attain a fundamental scientific understanding of nanoscale phenomena, particularly collective phenomena; (2) achieve the ability to design and synthesize materials at the atomic level to produce materials with desired properties and functions; (3) attain a fundamental understanding of the processes by which living organisms create materials and functional complexes to serve as a guide and a benchmark by which to measure our progress in synthetic design and synthesis; and, (4) develop experimental characterization and theory/modeling/simulation tools necessary to drive the nanoscale revolution.

The synergy of DOE assets, in partnership with universities and industry, will provide the best opportunity for nanoscience discoveries to be converted rapidly into technological advances. These will meet a variety of DOE mission and national needs, while enabling the U.S. to reap the benefits of an emerging technological revolution.

Scientific Discovery through Advanced Computing.—Modeling and simulation was one of the most significant developments in the practice of scientific research in the 20th century. It is essential to all of the Department's missions, including the design of nuclear weapons, the development of new energy technologies, and—most importantly—the discovery of new scientific knowledge. Research programs throughout SC have high priority scientific problems that can only be addressed by advances in computational modeling and simulation. These problems include:

—Predicting the effects of aging, cracking, fatigue, and catastrophic failure in materials; as well as designing new materials with desired properties and functions, e.g., catalysts, alloys, and photovoltaic devices.

—Designing new particle accelerators that provide the beam energy, intensity, and quality needed to continue our investigations into the fundamental nature of matter.

—Predicting the interaction of chemical reactivity and fluid dynamics to understand the mixing of reactants and the removal of products for applications as diverse as combustion, atmospheric chemistry, and chemical processing.

—Predicting the fate of contaminants in the subsurface, including chemical reactions and biological transformations, as well as fluid flow through porous material.

—Predicting and controlling plasma instabilities that lead to a critical loss of power density in Tokamaks and other magnetic fusion devices.

—Predicting the earth's climate at both regional and global scales from decades to centuries, including quantification of the uncertainties associated with the predictions.

Theoretical and experimental approaches alone do not provide sufficient information to understand and predict the behavior of systems as complex as those listed above. Computational modeling and simulation, which allows a complete description of the system to be constructed from basic physical principles and the available experimental data, is key to solving these problems.

SC has a long history of accomplishment in scientific computing and has served as the proving ground for new computer technologies-subjecting these technologies to the demands that only its most computationally intensive simulations could provide. In 1974, the Department established the first civilian supercomputer center for a national scientific community, the National Magnetic Fusion Energy Computing Center, which became the National Energy Research Scientific Computing Center (NERSC) and also became a model for centers established a decade later by NSF and other agencies.

SC's achievements in software for scientific computing are equally impressive. SC led the transition from the vector supercomputers of the 1970s and 1980s to the massively parallel supercomputers of today, providing much of the basic software required to use the massively parallel supercomputers. Many of the scientific simulation software packages for massively parallel supercomputers were developed by SC, a fact recognized by periodic awards from the supercomputing community.

To meet the current and future scientific challenges in its research programs, SC will capitalize on the 1,000-fold increase in computer capabilities that are predicted

to occur in the next five years. In fiscal year 2001, SC will make a set of coordinated investments that build on its established strength in computational modeling and simulation, computer science, applied mathematics, and high-performance computing as well as in the organization and management of large scientific projects. The SC-wide effort will address:

—Scientific Applications Codes including research, development, and deployment of advanced computational modeling and simulation codes, new mathematical/computational methods for advanced computers, and application of the codes and methods to challenging scientific problems.

—Computing Systems Software including the development and deployment of systems software and specifically mathematical methods, algorithms, and libraries that scale to ten thousand or more processors; software systems to enable the development and use of scientific applications codes; distributed computing and collaboration tools to support use of remote computing resources and enable integration of geographically-dispersed teams; scientific data management and analysis (visualization) systems to enable the extraction of knowledge from scientific simulations; and scalable, open-source operating systems to provide the basic infrastructure needed to use massively parallel computer systems.

—Computing Infrastructure includes an upgrade of the National Energy Research Supercomputing Center from 3½ to 5 teraflops, an upgrade to the ESnet to handle the larger datasets required by our scientific applications, and to investigate alternate computer architectures to determine those most effective to address the Department's scientific problems.

The proposed SC investments support the recommendations outlined in the report by the President's Information Technology Advisory Committee (PITAC) and take advantage of the capabilities being developed in the Accelerated Strategic Computing Initiative (ASCI) in the Office of Defense Programs for DOE's Stockpile Stewardship Program.

Unraveling the Mysteries of Nature's Chemical Factories—Microbial Cell.—The fiscal year 2001 request includes funds for a new activity to understand microbial processes at the molecular level. The understanding of the biochemical, metabolic, physiological and cellular processes will permit the generation of solutions for today's and tomorrow's challenges in energy production and use, environmental cleanup, carbon sequestration, plant sciences, and industrial processing. Microbes have dramatic impacts on energy production and conservation. Adverse effects include the fouling or corrosion of pipelines and other metal components used in energy production, significant reductions in the efficiency of heat exchangers, and the souring of fossil energy reserves. Conversely, microbes play a valuable role in numerous industrial fermentations and other bioprocesses that convert complex biomass into potential biofuels and chemical feedstocks. Harnessing microbes for our own uses is the goal.

This work capitalizes on SC's pioneering and leadership role in high throughput genomic DNA sequencing as part of the Human Genome Program; its longstanding support of microbial biochemistry, metabolism and physiology; its support of national user facilities for determining protein structures; and, the capabilities of its national laboratories in computational analysis and instrumentation research. The key scientific challenges are far greater than simply understanding how individual genes and proteins work. We need to understand how genes and proteins are regulated in a coordinated manner and how they are integrated into a functional, interactive cell.

Bioengineering.—The fiscal year 2001 budget request includes an increase for a research program in bioengineering, which uses SC's unique resources and expertise in the biological, physical, chemical and engineering sciences to develop new research opportunities for technological advances in biomedical applications. This activity will: advance fundamental concepts; create knowledge from the molecular to the organ systems level; and, develop innovative biologics, materials, processes, implants, devices, and informatics systems. The work will complement that of other federal programs by supporting early stage research that is not funded by other federal agencies. This program will be coordinated with all activities under the auspices of the Bioengineering Consortium (BECON), which includes SC, the National Science Foundation (NSF), and all of the individual NIH institutes.

Scientific Facilities Utilization.—Each year, over 15,000 university, industry, and government-sponsored scientists conduct cutting edge experiments at the particle accelerators, high-flux neutron sources, synchrotron radiation light sources, and other specialized facilities operated by SC. The user community continues to be pleased with the service provided to them by the SC scientific facilities, as evidenced by their many letters of support, by the positive results of surveys conducted at the facilities, and by the investigations of review committees.

In fiscal year 2001, operating budgets are increasing at our user facilities, such as the synchrotron radiation light sources, the neutron scattering facilities, and the Environmental Molecular Sciences Laboratory, to provide increased operating time and support for users and to fabricate instruments and beamlines to serve the large and growing user community at these facilities.

Spallation Neutron Source (SNS).—The purpose of the SNS Project is to provide a next-generation short-pulse spallation neutron source for neutron scattering. The SNS will be used by researchers from academia, national labs, and industry for basic and applied research, and for technology development in the fields of condensed matter physics, materials sciences, magnetic materials, polymers and complex fluids, chemistry, biology, and engineering. It is anticipated that SNS will be used by 1,000–2,000 scientists and engineers annually, and that it will meet the nation's need for neutron science capabilities well into the 21st century. When completed in 2006, the SNS will be more than ten times as powerful as the best spallation neutron source now in existence—ISIS at the Rutherford Laboratory in England.

Neutrons enable scientists studying the physical, chemical, and biological properties of materials to determine how atoms and molecules are arranged and how they move. This is the microscopic basis for the features that make materials of technological significance for many economically important areas. Major research facilities, such as the SC synchrotron and neutron sources, are used to understand and "engineer" materials at the atomic level so that they have improved macroscopic properties and perform better in new applications. The SNS is a next-generation facility for this type of research. Neutron scattering will play a role in all forms of materials research and design, including the development of smaller and faster electronic devices; lightweight alloys, plastics, and polymers for transportation and other applications; magnetic materials for more efficient motors and for improved magnetic storage capacity; and, new drugs for medical care.

The importance of high neutron flux (i.e. high neutron intensity) cannot be overstated. The relatively low flux of existing neutron sources and the very small fraction of neutrons that get scattered by most materials means that most measurements are limited by the source intensity. However, the pursuit of high-flux neutron sources is more than just a desire to perform experiments faster, although that, of course, is an obvious benefit. High flux enables broad classes of experiments that cannot be done with low-flux sources. For example, high flux enables studies of small samples, complex molecules and structures, time-dependent phenomena, and very weak interactions.

The SNS Project is a partnership among five DOE laboratories that takes advantage of specialized technical capabilities within the laboratories: Lawrence Berkeley National Laboratory in ion sources, Los Alamos National Laboratory in linear accelerators, Brookhaven National Laboratory in proton storage rings, Argonne National Laboratory in instruments, and Oak Ridge National Laboratory in targets and moderators.

The Department has met the conditions stipulated in the House Report (Report 106–253, pages 113–114) accompanying the fiscal year 2000 Energy and Water Development Appropriations Act concerning the release of construction funds for the SNS project, and has regularly communicated its progress to Congress. During the past year, the project has: established a revised project management structure with a single Executive Director who has been designated as the primary authority for the project; filled all senior positions with qualified individuals; established cost and schedule baselines that were externally reviewed and determined to be the most cost effective way to complete the project; and, established an inter-Laboratory Memorandum of Agreement and incorporated it by reference into the laboratory contracts, thus making it legally binding.

In the President's budget request, the estimated Total Project Cost (TPC) has increased from $1,360 million to $1,440 million and the construction schedule has been extended six months to the third quarter of fiscal year 2006 as a result of project restructuring during fiscal year 1999. Fiscal year 2001 funding of $281 million is requested for the SNS Project to conduct detailed design and start fabrication of key components and systems. Production of several significant equipment items will continue. Construction will begin on several conventional facilities in preparation for starting installation of major equipment. Construction will be completed on roads into the site, site preparation/grading, waste systems, and retention basins. Project management and integration activities, which are exceptionally important during this phase of the project, will also be conducted. Work will continue on the Safety Assessment Document for all of the facility except for the target system, for which a Safety Analysis Report will be prepared.

Since the Tennessee use tax, that applies to all tangible property either purchased in the state or brought into the state, had applied to the SNS, $28 million was included in the TPC for this tax liability. However, in late January 2000 the Tennessee legislature passed legislation, that was signed by Governor Sundquist, exempting the SNS from these taxes. The fiscal year 2001 estimate for these taxes was $2.5 million. This exemption will reduce the TPC to $1,411.7 million and will reduce the fiscal year 2001 request from $281 million to $278.5 million a reduction of $2.5 million for the fiscal year 2001 tax liability exemption.

Large Hadron Collider (LHC).—The foremost high energy physics research facility of the next decade will be the LHC at CERN, the European Laboratory for Particle Physics. The primary physics goals of the LHC will impact our understanding of the origin of mass through studies of the elusive "Higgs" particle, exploration of the structure and interactions of quarks, and unanticipated phenomena. The High Energy Physics Advisory Panel (HEPAP) strongly endorsed participation in the LHC to provide U.S. access to the high energy frontier in order to maintain the U.S. as a world leader in this fundamental area of science.

DOE and NSF have entered into an agreement with CERN, signed in 1997, arranging for participation in the LHC project (accelerator and detectors) at CERN that will primarily take the form of the U.S. accepting responsibility for designing and fabricating particular subsystems of the accelerator and of the two large detectors. Thus, much of the funding will go to U.S. laboratories, university groups, and industry for fabrication of subsystems and components which will become part of the LHC accelerator or detectors. A portion of the funds will be used to pay for purchases by CERN of material needed for construction of the accelerator. As a result of the negotiations, CERN has agreed to make these purchases from U.S. vendors.

This agreement, provides access for U.S. scientists to the next decade's premier high energy physics facility. Under the agreement, the DOE will contribute $450 million ($250 million for the detectors and $200 million for the accelerator) to the LHC effort over the period fiscal year 1996 through fiscal year 2004. The total cost of the LHC is estimated at about $6,000 million. The U.S. contribution represents less than ten percent of the total cost of the project. The Office of Science has conducted a cost and schedule review of the entire LHC project and similar reviews of the several proposed U.S. funded components of the LHC. All of these reviews concluded the costs are properly estimated and that the schedule is feasible.

The LHC collaboration includes a very active interagency cooperation. A DOE–NSF Joint Oversight Group meets every six months and a program level working group meets every two weeks. The agreement negotiated with CERN provides for U.S. involvement in the management of the project through participation in key management committees such as the CERN Council, CERN Committee of Council, and the LHC Board. In addition, both DOE and NSF participate in the Joint Coordinating Committee established with CERN to oversee the collaboration on an annual basis. Laboratory and university collaborations have even more extensive contacts.

Work on the LHC detectors is progressing across the United States. Brookhaven is the host laboratory for the ATLAS detector, which also involves Argonne and Lawrence Berkeley National Laboratories, and 28 university groups. Fermilab is the host laboratory for the Compact Muon Solenoid (CMS) detector, which also involves Brookhaven and Los Alamos National Laboratories, and 33 university groups. Cost and schedule baselines have been reviewed and validated for each U.S. portion of the project, and management systems are in place to monitor progress against baselines.

Scientific and Technical Workforce Retention and Recruitment.—During 1999, DOE conducted a systematic analysis of staffing needs required for current and projected R&D program missions. As a result, staffing shortfalls were identified, especially in scientific and technical disciplines. Alarmingly, one half of the R&D technical managers are currently eligible to retire. In fiscal year 2001, the Department will focus on building and sustaining a talented and diverse workforce of R&D technical managers through innovative recruitment strategies, retention incentives, comprehensive training and development programs, and succession planning.

SC, using Program Direction funds, will recruit experienced scientists and related support staff in areas important to the Department's science mission. Other key activities to be supported include motivating and retaining highly skilled, top-performing technical managers, and the training of new and current scientists.

In addition, SC university research programs and projects at the national laboratories provide competitive financial support for undergraduate and graduate students and post-doctoral investigators as an integral part of the funding for fundamental scientific research in universities and in the private sector. SC scientific user facilities provide outstanding hands-on research experience to many young scientists. Specific fellowship programs are also sponsored by SC to target emerging

areas of need. A total of 6,550 graduate students and post-doctoral investigators were supported at universities and national laboratories in fiscal year 1999 and 4,840 made use of the SC Scientific User Facilities. SC will continue its support for graduate students and post-doctoral investigators in fiscal year 2001.

PERFORMANCE MEASURES

All three of SC's global scientific performance measures were fully met in fiscal year 1999.

—Construct large-scale facilities so that projects are completed within 110 percent of cost and schedule baselines. All SC projects completed in fiscal year 1999 met 100 percent of the cost and schedule baselines.

—Maintain and operate the scientific user facilities so that the unscheduled down time on average is less than 10 percent of the total scheduled operating time. Fiscal year 1999 performance resulted in an average of less than 9 percent unscheduled downtime.

—Excellence in basic research: All research projects will continue to be reviewed by appropriate peers and selected through a merit-based competitive process. In fiscal year 1999, 91 percent of DOE grants were awarded through a competitive merit-based process.

In addition, the following performance goals were fully met in fiscal year 1999:

—Continued collaborative efforts with NASA on space science and exploration.

—Delivered on the 1999 U.S./DOE commitments to the international LHC project.

—Completed construction and began commissioning of the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory on time and within budget.

—Began Title I design activities, initiated subcontracts and long-lead procurement and continued R&D work necessary to begin construction activities of the SNS.

—Completed the National Spherical Torus Experiment (NSTX) at the Princeton Plasma Physics Laboratory within scope and budget, achieving first plasma milestone ahead of schedule.

SCIENCE PROGRAMS—ADVANCED SCIENTIFIC COMPUTING RESEARCH

Fiscal Year 2001 Request—$182.0 M

The Advanced Scientific Computing Research (ASCR) program supports advanced computing research—applied mathematics, high performance computing, and networking—and operates supercomputer and associated facilities that are available to researchers 24 hours a day, 365 days a year. The combination of support for fundamental research, computational and networking tools development, and high-performance computing facilities provides scientists with the capabilities to analyze, model, simulate, and—most importantly—predict complex phenomena of importance to SC and DOE.

A new federally-chartered advisory committee has been established for the ASCR program and has been charged with providing advice on: promising future directions for advanced scientific computing research; strategies to couple advanced scientific computing research in other disciplines; and the relationship of the DOE program to other federal investments in information technology research. This advisory committee will play a key role in evaluating future planning efforts for research and facilities.

Some of the pioneering accomplishments of the ASCR program are: development of the technologies to enable remote, interactive access to supercomputers; research and development leading to the High Performance Parallel Interface (HiPPI) standard; and, research leading to the development of the slow start algorithm for the Transmission Control Protocol (TCP), which enabled the Internet to scale to today's worldwide communications infrastructure. This long history of accomplishments in the ASCR program continued to be recognized in fiscal year 1999 including: the Maxwell Prize, the Crystal Award of Excellence, several awards at Supercomputing 1998 and Supercomputing 1999 including "Best of Show" and "Best Paper" in 1998, a Genius Grant from the MacArthur Foundation, the 39th Annual G.H.A. Clowes Memorial Award, the American Physical Society's James C. McGroody Prize, the Humboldt Research Award, Presidential Early Career Awards, and Federal Laboratory Consortium Awards.

During the past quarter century computational simulation has dramatically advanced our understanding of the fundamental processes of nature and has been used to gain insights into the behavior of such complex natural and engineered systems as the earth's climate and automobile design. The new generation of terascale computing tools, and the 1,000 times more powerful petascale computing capabilities that are now on the horizon, will enable scientists to dramatically improve their understanding of fundamental processes in many areas. In addition, these new tools

will enable scientists to predict the behavior of many complex natural and engineered systems from a knowledge of the underlying physical, chemical, and biological processes involved. This new capability, to predict the behavior of complex systems based on the properties of their components, will change the way DOE and other government agencies solve their most demanding, mission-critical problems. A workshop held at the National Academy of Sciences in July 1998 identified opportunities for new scientific discovery through advanced computing in all of the SC programs.

The ASCR program has worked with the other SC research programs, other federal agencies, and the broad scientific community to formulate a vision for advanced scientific computing within SC. This work, conducted during the past two years, forms the basis for the investment choices described in the fiscal year 2001 budget; aspects of these investments have been previously described in this testimony. Success in the scientific applications of high-performance computing depends on investments in applied mathematics and computer science to provide the algorithms, mathematical libraries, and underlying computer science tools to enable the scientific disciplines to make effective use of terascale computers.

Despite considerable progress during the past ten years in making massively parallel computer systems usable for science applications, much remains to be done. The next generation computer systems to enable leading-edge applications will have between 5,000 and 10,000 individual computer processors rather than the 500 to 1,000 processors in today's typical high performance systems. In addition, the internal structure of the computers will become more complex as computer designers are forced to introduce more layers of memory hierarchy to maintain performance and develop new hardware features to support rapid communication and synchronization. The end result five years from now will be hardware systems that, while having their roots in today's systems, will be substantially different, substantially more complex and therefore more challenging to exploit for high performance. These challenges will require substantial improvements in parallel computing tools, parallel I/O (input/output) systems, data management, algorithms, and program libraries that must work together as an integrated software system. In addition to the fundamental research challenges that are implied by this evolution in computer hardware, DOE must integrate the output from successful SC research projects into integrated sets of software tools that scientists in disciplines as diverse as global climate, materials science, and computational biology can build on to address scientific challenges.

In fiscal year 2001 the ASCR program will, through enhancements to the Mathematical, Information, & Computational Sciences (MICS) subprogram, produce the scientific computing, networking and collaboration tools that SC researchers require to address the scientific challenges of the next decade. These enhancements build on the historic strength of the MICS subprogram in computational science, computer science, applied mathematics, and high-performance computing. They also take full advantage of the dramatic increases in computing capabilities being fostered by the Accelerated Strategic Computing Initiative (ASCI) in the Office of Defense Programs.

Research programs throughout the Office of Science have high priority scientific problems that can only be addressed by computational modeling and simulation. These problems include:

—Predicting the effects of aging, cracking, fatigue, and catastrophic failure in materials; designing new materials with desired properties and functions, e.g., catalysts, alloys, and photovoltaic devices.

—Designing particle accelerators that provide the beam energy, intensity, and quality needed to continue forefront investigations into the fundamental nature of matter.

—Predicting the interaction of chemical reactivity and fluid dynamics to understand the mixing of reactants and the removal of products for applications as diverse as combustion, chemical processing, and atmospheric chemistry.

—Predicting the fate of contaminants in the subsurface, including chemical reactions and biological transformations, as well as fluid flow through porous material.

—Predicting and controlling plasma instabilities that lead to a critical loss of power density in tokamaks and other magnetic fusion devices.

The size and complexity of these problems require the development of fast and efficient algorithms and software that can take advantage of the power of today's massively parallel computing platforms.

The MICS subprogram will address these challenges by establishing a small number of competitively selected partnerships focused on discovering, developing, and deploying to scientists key enabling technologies. These partnerships, which will be

called enabling technology centers, must support the full range of activities from basic research through deployment and training because the commercial market for software to support terascale scientific computers is too small to be interesting to commercial software providers. These centers will build on the successful experience of the program in managing the DOE2000 initiative, as well as the lessons learned in important programs supported by DARPA such as Project Athena at MIT, the Berkeley Unix Project, and the initial development of the Internet software and the Internet Activities Board (IAB). These enabling technology centers will have close ties to key scientific applications projects to ensure their success.

In addition, the MICS subprogram will support increased fundamental research in networking and collaboration tools, partnerships with key scientific disciplines, and advanced network testbeds. This is necessary to support researchers using the major experimental facilities, computational resources, and data resources supported by DOE. With leadership from SC, geographically distributed laboratories or collaboratories have begun to play an important role in the nation's scientific enterprise. The importance of collaboratories is expected to increase in the future.

However, significant research questions must be addressed if collaboratories are to achieve their potential. For example, typical Relativistic Heavy Ion Collider (RHIC) experimental collaborations involve thousands of scientists and hundreds of institutions spread around the world who need access to petabytes of data (a billion times as much data as a large web page). Using the current Internet, it would take about 2,500 hours to transmit one day's data from RHIC to one remote site for analysis. Significant research is needed to enable today's commercial networks to be used for scientific data retrieval and analysis, to provide remote visualization of terabyte to petabyte data sets from computational simulation, and to enable remote access to petabyte/year High Energy and Nuclear Physics facilities such as the RHIC and to tomorrow's advanced scientific computer.

To realize this scientific opportunity, enhancements to SC's computing and networking facilities are required. The current computers at the National Energy Research Scientific Computing (NERSC) Center provide less than half of the computer resources that were requested last year. This pressure on the facility will continue to increase in future years as more applications become ready to move from testing the software, to using the software to generate new science. In addition, as the speed of computers increases, the amount of data they produce also increases. Therefore, focused enhancements to SC's network infrastructure are required to enable scientists to access and understand the data generated by their software. These network enhancements are required to allow researchers to have effective remote access to the SC experimental facilities.

The MICS subprogram will also increase funding for SC's computing and networking facilities. The ASCR budget request includes $32.3 million in fiscal year 2001 to support NERSC. This investment will provide computer time for about 2,000 scientists in universities, federal agencies, and U.S. companies and will enable NERSC to maintain its role as the nation's largest, premier unclassified computing center. Research communities that benefit from NERSC include: structural biology; superconductor technology; medical research and technology development; materials, chemical, and plasma sciences; high energy and nuclear physics; and environmental and atmospheric research.

The research and development activities supported by the ASCR program are coordinated with other federal efforts through the Interagency Principals Group, chaired by the President's Science Advisor, and the Information Technology Working Group (ITWG). The ITWG represents the evolution of an interagency coordination process that began under the 1991 High Performance Computing Act as the High Performance Computing, Communications, and Information Technology (HPCCIT) Committee. SC has been a key participant in these coordination bodies from the outset and will continue to coordinate its R&D efforts closely through this process.

This program will make significant contributions to the nation's Information Technology Basic Research effort just as previous SC mission-related research efforts have led to SC's leadership in this field. In particular, the enhanced MICS subprogram will place emphasis on software research to improve the performance of high-end computing as well as research on the human-computer interface and on information management and analysis techniques. In addition, through NERSC and the Advanced Computing Research Facilities, the program will provide the most powerful high-end computers available to the nation's scientific and engineering communities.

In addition to these computing related activities, ASCR also manages the Laboratory Technology Research (LTR) program. The mission of this program is to support high risk, energy related research that advances science and technology to enable applications that could significantly impact the nation's energy economy. LTR fos-

ters the production of research results motivated by a practical energy payoff through cost-shared collaborations between SC laboratories and industry. In fiscal year 1999, the LTR subprogram initiated a portfolio of Rapid Access Projects that address research problems of small businesses by utilizing the unique facilities of the SC laboratories. These projects were selected on the basis of scientific, technical and potential commercial merit, using competitive external peer review. The LTR subprogram received five R&D–100 Awards in 1999.

The Advanced Energy Projects subprogram under ASCR was terminated in fiscal year 2000.

BASIC ENERGY SCIENCES

Fiscal Year 2001 Request—$1,015.8 M

The Basic Energy Sciences (BES) program is one of the nation's major sponsors of fundamental research in the broad areas of materials sciences, chemical sciences, geosciences, plant and microbial sciences, and engineering sciences. The program encompasses more than 2,400 researchers in nearly 200 institutions and 16 of the nation's outstanding user facilities. The BES program funds research at 149 colleges and universities located in 48 states. The inclusion of research activities at this large number of academic institutions is a vital part of the program. These scientists are funded through individual peer-reviewed grants and as members of peer-reviewed research teams involving investigators from both national laboratories and universities. In addition, university-based scientists are among the principal users of the BES user facilities. The BES program has taken a leadership role in defining and addressing the 21st century challenges facing the natural sciences—from understanding collective effects in materials to designing new materials atom by atom and, finally, to developing functional materials. Functional materials are those with the ability to self assemble, self repair, sense, respond, and evolve in order to provide functional properties—optical, mechanical, catalytic, electrical, and tribological. Envisioning and creating these materials is the coming challenge for the disciplines of materials sciences, chemistry, physics, and biology. This work during the past few years has led to the expansion in the base program effort in nanoscale research.

Within the base research effort in fiscal year 2001, a program in Nanoscale Science, Engineering, and Technology Research will continue to support work at the frontiers of basic research that hold the promise of delivering revolutionary breakthroughs. In the fiscal year 2001 request, new funding in the amount $36.1 million is requested for these activities. Funds are distributed within the Materials Sciences, Chemical Sciences, and Engineering and Geosciences subprograms. The BES program has worked with the National Science and Technology Council's Interagency Working Group on Nanotechnology, the Basic Energy Sciences Advisory Committee (BESAC), and the broad scientific community from academia, industry, and the national laboratories to define and articulate the goals of this research and determine how best to implement a program.

In the fiscal year 2001 request, funding in the amount of $2.4 million is requested for Microbial Cell research activities within the Energy Biosciences subprogram. New research activities coordinated with activities in the Biological and Environmental Research program focus on a bacterial cell consisting of a minimal set of genes essential for life. The specific research target will be understanding the biochemical and physiological functions of this set of genes. Additional studies will determine the genes and gene functions required for a particular physiological process.

The fiscal year 2001 budget supports continued activities within the Climate Change Technology Initiative (CCTI). In fiscal year 2001, resources of $19.5 million are being requested in BES, which is the same amount as the fiscal year 2000 appropriation. These funds will be used to continue the research projects selected in fiscal year 2000. All CCTI activities are peer-reviewed fundamental scientific research that expand upon core research activities.

Also included in the fiscal year 2001 request are funds in BES in the amount of $47.1 million that potentially impact solar and renewable energy resource production and use in the categories of biomass, wind energy, photovoltaics, hydrogen, and other (solar photoconversion). These funds provide continuing support for multidisciplinary, basic research in the BES Materials Sciences, Chemical Sciences, and Energy Biosciences subprograms.

In addition to directly supporting research performers, BES is also the steward of 16 major national user facilities. Research communities that have benefited from the BES supported Scientific User Facilities include materials sciences, chemical sciences, earth and geosciences, environmental sciences, structural biology, superconductor technology, medical research, and industrial technology development. Included within this request to sustain a constant level of effort increase operations

at each of the four BES synchrotron radiation light sources as well as additional funding to address specific recommendations of the 1997 BESAC review "Synchrotron Radiation Sources and Science" for each of the light sources.

Also included within this request are funds to address neutron science following the closure of the High Flux Beam Reactor. Additional operating funds are provided to permit increased operations at other neutron sources, and additional capital equipment and accelerator improvement funds are provided for new instruments and infrastructure improvements, respectively. These actions are in accord with recommendations recently provided by BESAC, which was charged with providing guidance to the BES program for the near-term needs of the neutron science community, i.e., for the period during which the Spallation Neutron Source will be under construction. The synchrotron radiation light sources and the neutron sources serve a wide variety of research disciplines, and it is important that these facilities be operated so as to optimize beam availability and reliability to serve their users. The funds requested will ensure this high level of operation.

BES scientific user facilities enable researchers to gain the new knowledge necessary to achieve the Department's missions and, more broadly, to advance the nation's entire scientific enterprise. The number of scientists conducting research at the BES user facilities has grown dramatically in recent years. BES user facilities are open to all qualified investigators in academia, industry, and government laboratories on a no-charge basis to all qualified researchers whose intention is to publish in the open literature. Over 6,000 users were accommodated at the BES scientific user facilities in fiscal year 1999. These facilities have an enormous impact on science and technology, ranging from determinations of the structure of superconductors and biological molecules to the development of wear-resistant prostheses; from atomic-scale characterization of environmental samples to elucidation of geological processes; and from the production of unique isotopes for cancer therapy to the development of new medical imaging technologies.

Materials Sciences.—The Materials Sciences subprogram supports basic research in condensed matter physics, metal and ceramic sciences, and materials chemistry. This basic research seeks to understand the atomistic basis of materials' properties and behavior and how to make materials perform better at acceptable cost through new methods of synthesis and processing. Basic research is supported in corrosion, metals, ceramics, alloys, semiconductors, superconductors, polymers, metallic glasses, ceramic matrix composites, catalytic materials, non-destructive evaluation, magnetic materials, surface science, neutron and x-ray scattering, chemical and physical properties, and new instrumentation. Ultimately the research leads to the development of materials that improve the efficiency, economy, environmental acceptability, and safety in energy generation, conversion, transmission, and use. These material studies affect developments in numerous areas, such as: the efficiency of electric motors and generators; solar energy conversion; batteries and fuel cells; stronger, lighter materials for vehicles; welding and joining of materials; plastics; and petroleum refining.

Chemical Sciences.—The Chemical Sciences subprogram has two major components. One major component is comprised of photo- and radiation-chemistry; chemical physics; and atomic, molecular and optical (AMO) science. This research provides a foundation for understanding fundamental interactions of atoms, molecules, and ions with photons and electrons. This work also underpins our fundamental understanding of chemical reactivity. This, in turn, enables the production of more efficient combustion systems with reduced emissions of pollutants. It also increases knowledge of solar photoconversion processes resulting in new improved systems and production methods. The other major component of the research program is comprised of physical chemistry, inorganic chemistry, organic chemistry, analytical chemistry, separation science, heavy element chemistry, and aspects of chemical engineering sciences. The research supported provides a better molecular level understanding of homogeneous and heterogeneous reactions occurring at surfaces, interfaces, and in bulk media. This has resulted in improvements to known heterogeneous and homogeneous catalytic systems, new catalysts for the production of fuels and chemicals, and better analytical methods in a wide variety of applications in energy processes. It has also provides new knowledge of actinide elements and separations important for environmental remediation and waste management, and better methods for describing turbulent combustion and predicting thermophysical properties of multicomponent systems.

Engineering and Geosciences.—The Engineering and Geosciences subprogram conducts research in both of these disciplinary areas. In Engineering Research, the goals are to extend the body of knowledge underlying current engineering practice to create new options for improving energy efficiency and to broaden the technical and conceptual knowledge base for solving the engineering problems of energy tech-

nologies. In Geosciences Research, the goal is fundamental knowledge of the processes that transport, concentrate, emplace, and modify the energy and mineral resources and the byproducts of energy production. The research supports existing energy technologies and strengthens the foundation for the development of future energy technologies. Ultimately the research impacts control of industrial processes to improve efficiency and reduce pollution, increase energy supplies, lower cost, and increase the effectiveness of environmental remediation of polluted sites.

Energy Biosciences.—The Energy Biosciences subprogram supports fundamental research related to a molecular level understanding of the formation, storage, and interconversion of energy by plants and microorganisms. Plants and microbes serve as renewable resources for fuel and other fossil resource substitutes, as agents to restore previously disrupted environmental sites, and as potential components of industrial processes to produce new products and chemicals in an environmentally benign manner. The program supports research in a number of topics related to these areas. These include research in photosynthesis and bioenergetics; the biosynthesis, structure and function of plant cell walls (the major component of plant biomass); the bioproduction and bioconversion of methane; the biodegradation of lignocellulose; the biosynthesis of starch and lipids (plant energy storage compounds); plant secondary metabolism; microbial fermentations ; microbial thermophily; and processes that offer unique possibilities for research at the interface of biology and the physical, earth, and engineering sciences.

BIOLOGICAL AND ENVIRONMENTAL RESEARCH

Fiscal Year 2001 Request—$445.3 M

For over 50 years, the Biological and Environmental Research (BER) program has been investing to advance environmental and biomedical knowledge connected to energy. Through its support of peer-reviewed research at national laboratories, universities, and private institutions, the program develops the knowledge needed to identify, understand, anticipate, and mitigate the long-term health and environmental consequences of energy production, development, and use.

The BER program continues its commitment to and dependence on research scientists at our nation's universities. University-based scientists are an integral part of research programs across the entire range of the BER portfolio and are the principal users of BER facilities for structural biology—at the Environmental Molecular Sciences Laboratory, and the Natural and Accelerated Bioremediation Research (NABIR) Program's Field Research Center. University scientists also form the core of the Atmospheric Radiation Measurement (ARM) science team that networks with the broader academic community as well as with scientists at other agencies, such as the NASA and the National Oceanic and Atmospheric Administration (NOAA). In addition, university-based scientists are funded through their response to Requests for Applications across the entire BER program.

The BER request includes funding for Scientific User Facilities such as the William R. Wiley Environmental Molecular Sciences Laboratory which enables research activities that underpin long-term environmental remediation. This funding will provide for the operation of the facilities, assuring access for scientists in universities, federal laboratories, and industry. It will also leverage both federally and privately sponsored research at these facilities. The request includes support for infrastructure and development of user facilities at synchrotrons and neutron sources for the nation's structural biologists. Support of structural biology user facilities is coordinated with NIH and NSF. Support is also included for the operation of the Natural and Accelerated Bioremediation Research (NABIR) Program's Field Research Center and ARM research sites.

The Human Genome Program continues to be a centerpiece of the BER research program, both in terms of its contribution to the international effort to sequence the human genome, and in terms of the spin-off technologies. Through efforts at the Joint Genome Institute (JGI) and its Production Sequencing Facility, DOE does its share of high-throughput human DNA sequencing and develops, validates, and integrates new DNA sequencing technologies into the production of DNA sequencing. Fiscal year 2001 is the fourth year of a major five year scale-up of DNA sequencing capacity to achieve the international goal of a complete sequence by 2003. The BER request for fiscal year 2001 includes $90.3 million for human genome research. The DOE's share of the funding for the U.S. Human Genome Program is about 25 percent of the national effort. University scientists, working with the JGI, play a key role in completing DOE's share of determining the human DNA sequence.

The fiscal year 2001 request also includes $9.7 million for the Microbial Cell project. This project, a joint effort between BER and Basic Energy Sciences, capitalizes on DOE's pioneering and leadership role in high throughput genomic DNA se-

quencing; its longstanding support of microbial biochemistry, metabolism and physiology; its support of national user facilities for determining protein structures; and the capabilities of its national laboratories in computational analysis and instrumentation research. The goal of the Microbial Cell project is to develop a comprehensive understanding of the complete workings of a microbial cell, from the DNA sequence, to the identification of all the genes, to the production of all the proteins whose assembly instructions are contained in the genes, to the complex interaction of the genes and proteins in a cell that give the microbe its life and its unique characteristics and behaviors.

The fiscal year 2001 request also includes $6.7 million for a research program in Bioengineering Engineering. The Bioengineering program will support collaborations between the DOE national laboratories and leading medical schools and teaching hospitals. These collaborations will leverage the laboratories' unique resources and expertise in the biological, physical, chemical, engineering, and computing sciences to provide innovative solutions to medical application. The program builds on research in the nuclear medicine field that SC originated and has supported for over half a century.

The fiscal year 2001 budget request supports a continuation of two carbon-related programs, each coordinated among several offices and agencies. The first is the Climate Change Technology Initiative (CCTI). CCTI focuses on the underpinning fundamental science that will enable mitigation of climate change and is supported by both BER and the Basic Energy Sciences program. The second is the U.S. Global Change Research Program (US/GCRP). US/GCRP research focuses on developing the fundamental understanding of the comprehensive climate system and the global and regional manifestations of climate change. The two programs complement one another. For example, "A U.S. Carbon Cycle Science Plan" was undertaken by the US/GCRP and the "Carbon Sequestration Research and Development Report" was developed under the auspices of the CCTI. The BER request includes fiscal year 2001 funding for CCTI of $16.3 million. Ongoing CCTI research includes two focused efforts in carbon sequestration in oceans and the earth, and the sequencing of the DNA of several microbes critical to biological sequestration. Research projects span a broad array of disciplines, including ecology and biology.

Life Sciences.—In addition to the Human Genome Program and the Microbial Cell project, life sciences research is focused on utilizing unique DOE resources and facilities to develop fundamental biological information and advanced technologies for understanding and mitigating the potential health effects of energy development, use, and waste cleanup. Research is conducted in five areas: structural biology, cellular biology, molecular biology, human genome, and health effects.

Structural biology research supports national user facilities and emphasizes the development and use of robust computational processes and new technologies and methodologies to predict and understand the three-dimensional structure and dynamic behavior of proteins and protein complexes involved in the recognition and repair of DNA damage or the bioremediation of metals and radionuclides.

Molecular biology research emphasizes microbial systems, including the Microbial Cell project, microbial genomics, and molecular aspects of the CCTI program. The field of microbial genomics continues to be one of the most exciting, high profile, and rapidly growing fields in biology today, expanding from the SC-initiated program to other federal agencies and private industry. The BER Microbial Genome program has supported the complete genomic sequencing of 15 of the approximately 50 bacteria whose DNA have been sequenced. The sequencing of more than 40 additional microbes is in progress in the scientific community. The broad impacts of this research emphasize a central principle of the SC genome programs—complete genomic sequences yield answers to fundamental questions in biology. Microbes are being sequenced and characterized in several parts of the BER program with potential impacts across several DOE missions including: CCTI, microbes for cleaning up the environment, alternative fuel sources (methane production or energy from biomass), and microbes that produce industrially useful enzymes. As the number of complete and in-progress microbial genomes grows, the microbial genome program is shifting its emphasis from a predominant focus on genomic sequencing to a broader emphasis on the use and discovery of new knowledge from microbes whose genomic DNA sequences have been determined. In addition to sequencing the DNA of microbes important to the CCTI, a key component of CCTI research is to identify and understand genes, proteins, and entire biochemical pathways or gene regulatory networks that address the fuel production or carbon sequestration goals of CCTI.

The low dose radiation research program, the central focus of cellular biology research, provides information that is a key determinant in decisions made to protect people from adverse health risks from exposure to radiation. This information will provide a better scientific basis for remediating contaminated DOE sites and achiev-

ing acceptable levels of human health protection, both for cleanup workers and the public, in a more cost-effective manner that could save billions of dollars.

Health Effects conducts research and develops tools needed to speed understanding of the human genome. If the sequencing of the human genomic DNA provide the complete parts list for the human genome, this research contributes to the development of a "high tech owner's manual" that is critical for understanding normal human development and disease processes.

Environmental Processes.—Research is focused on understanding the basic chemical, physical, and biological processes of the earth's atmosphere, land, and oceans and how these processes may be affected by energy production and use, primarily the emission of carbon dioxide from fossil fuel combustion. A major part of the research is designed to provide the data that will enable an objective assessment of the potential for, and consequences of, global warming. The program is comprehensive with an emphasis on understanding the radiation balance from the surface of the earth to the top of the atmosphere (including the role of clouds) and on enhancing the quantitative models necessary to predict possible climate change at the global and regional scales.

The Atmospheric Radiation Measurement (ARM) program produces the experimental and modeling results necessary to resolve the greatest uncertainty in climate prediction—the role of clouds and solar radiation. Climate modeling uses massively parallel supercomputers to simulate climate change, predict climate, and evaluate model uncertainties due to changes in atmospheric concentrations of greenhouses gases on decade to century time scales. The Atmospheric Science program acquires data to understand the atmospheric processes that control the transport, transformation, and fate of energy-related chemicals and particulate matter. Emphasis is placed on processes relating to new air quality standards for tropospheric ozone and particulate matter and relationships between air quality and climate change. Funding is included in Environmental Processes for DOE's contribution to the US/GCRP that was codified by Congress in the Global Change Research Act of 1990.

BER supports research, at several levels, to understand and identify the sources, destinations, and impacts of carbon dioxide in our global environment. The Carbon Cycle program is designed to study the natural carbon cycle, including quantifying the role of the terrestrial biosphere as a sink or source of carbon dioxide. The program on Ecosystem Research is designed to provide information on the effects of atmospheric and climate changes on terrestrial organisms and ecosystems, including the potential direct effects of increasing atmospheric carbon dioxide levels. CCTI research supports two focused efforts on the sequestration of carbon in terrestrial or ocean systems. Research includes the identification of biochemical or physical pathways or processes that could be modified to enhance the net flow of carbon out of the atmosphere and an assessment of the environmental implications of long-term carbon sequestration or storage options.

Environmental Remediation.—Research is primarily focused on gaining a better understanding of the fundamental biological, chemical, geological, and physical processes that must be marshaled to develop and advance new, effective, and efficient processes for the remediation and restoration of the nation's nuclear weapons production sites. Bioremediation activities are centered in the Natural and Accelerated Bioremediation Research (NABIR) program, a basic research program focused on determining the conditions under which bioremediation will be a reliable, efficient, and cost-effective technique. A key goal is to define and develop an integrative model to aid collaboration and direction across research teams within the NABIR program.

The "Bioremediation and Its Societal Implications and Concerns" (BASIC) component of NABIR will explore societal issues surrounding bioremediation research and promote open and two-way communication with affected stakeholders.

A high priority for this program is the operation of the William R. Wiley Environmental Molecular Sciences Laboratory (EMSL), a national user facility for basic research that will underpin safe and cost-effective environmental remediation methods and technologies and other environmental priorities. Research is also included in support of pollution prevention, sustainable technology development, and other fundamental research to address problems of environmental contamination.

Medical Applications and Measurement Science.—The Medical Applications subprogram supports research to develop beneficial applications of nuclear and other energy-related technologies for medical diagnosis and treatment. The research is directed at discovering new applications of radiotracer agents for medical research as well as for clinical diagnosis and therapy. The program seeks breakthroughs in noninvasive imaging technologies such as positron emission tomography. A major emphasis is placed on cutting edge research to image gene expression and to develop new approaches to pharmaceutical design that will enable the development of tech-

nology to actually see genes in action in cells and organs. This new technology will strongly impact and have broad utility for scientists in developmental biology, genomics, and general medical scientists.

Bioengineering is included in the medical applications program. As previously described, research is directed to fundamental studies in artificial organs, biological and chemical sensors, imaging, lasers, informatics, and other areas of technical expertise in the DOE laboratories.

FUSION ENERGY SCIENCES

Fiscal Year 2001 Request—$247.3 M

The Fusion Energy Sciences program is the nation's primary sponsor of research in plasma physics and fusion science. The program is a multi-purpose, scientific research effort, producing valuable scientific knowledge and technological benefits in the near term and providing the science base for a fusion energy option in the long term. The mission of the Fusion Energy Sciences program is to advance plasma science, fusion science and fusion technology, and thereby establish the knowledge base for an economically and environmentally attractive fusion energy source. The program also trains future researchers not only for fusion research, but also for related areas such as plasma processing, space plasma physics, plasma electronics, and accelerator/beam physics. In fiscal year 1999, the program supported 365 graduate students and post doctoral investigators; 49 of these graduate students and post doctoral investigators conducted research at the Fusion Energy Sciences' scientific user facilities.

The Fusion Energy Sciences program is composed of three subprograms; Science, Facility Operations, and Enabling R&D. The Science subprogram includes research funds for: general plasma science; for experiments on the physics of high temperature plasmas in magnetic fields, in both tokamaks and other configurations; for the physics of heavy ion beam accelerators; and for theory and modeling of fusion plasmas. Funds for building, operating, upgrading and decommissioning of major facilities are in the Facility Operations subprogram. The Enabling R&D subprogram includes funds for key fusion technology research and innovations needed to advance fusion science and have thus enabled many of the advances in fusion science that have occurred during the past 30 years. All three subprograms contribute to the knowledge base for an attractive fusion energy source.

Fusion research provides two major benefits—in the near term there are both advances in plasma science and technology spinoffs and in the long-term there is the basis for development of a new energy source. Advances in plasma science have contributed to numerous other areas of science. In astrophysics, it has allowed an understanding of the behavior of plasma and magnetic fields in the earth's magnetosphere, in the sun, other stars, and the galaxies. Plasma physics is integral to our understanding of magnetic storms, solar flares, shock waves in space, magnetic fields, black holes, and star formation. In the area of large-scale scientific computing, fusion research pioneered the use of supercomputers to solve complex problems. Novel optical and magnetic diagnostics have been created to provide access to the extreme temperature, density, and magnetic fields prevalent in fusion experiments. In addition, fusion and other plasma based research has provided a stimulus to the development of large superconducting magnets, development of advanced materials, advancement in pulsed-power technology, and plasma aided manufacturing processes such as those used in semiconductor device fabrication.

This is a time of important progress and scientific discovery in fusion research. By virtue of previous investments in facilities, sophisticated diagnostics, critical technologies, and modeling capabilities, the Fusion Energy Sciences program is making great progress in understanding the fundamental processes involved in confining fusion fuels, such as the turbulence responsible for loss of particles and energy across magnetic field lines. In addition, the program is exploring innovative approaches to fusion energy, including supporting advances in state-of-the-art enabling technology, in search of an optimized confinement system that could result in an affordable development path.

A major review of magnetic and inertial fusion energy options was carried out by a task force of the Secretary of Energy Advisory Board (SEAB) in response to Congressional requests. The task force report was issued in August 1999. The report's Executive Summary states that, "In the light of the promise of fusion and the risks arising from increasing worldwide energy demand and from eventually declining fossil energy supply, it is our view that we should pursue fusion aggressively." The task force also endorsed the revised focus of the magnetic fusion program to understand the science and technology of fusion. It also concluded that the inertial fusion energy program warranted continued exploration and development. The National

Academy of Sciences is reviewing the quality of science in the Fusion Energy Sciences Program. An interim report was issued in August 1999, highlighting the contributions of fusion science to other fields of research. The full study, including strategic recommendations, will be completed in fiscal year 2000.

At a two-week long workshop in the summer of 1999, 350 fusion researchers from the United States and about 15 researchers from abroad discussed virtually all of the key technical issues associated with fusion science. This workshop provided a very effective forum for enhanced interaction between magnetic fusion and inertial fusion approaches, between science and technology issues, and between basic understanding and energy applications of fusion. The community reaffirmed that the next frontier in magnetic fusion is the science of burning plasmas, and that the tokamak is technically ready for a high-gain burning plasma experiment. The Fusion Energy Sciences Advisory Committee (FESAC) led a community assessment of the restructured fusion program and provided a report, with specific recommendations on program priorities and balance, in September 1999.

Preparation of a strategic plan for Fusion Energy Sciences was initiated in fiscal year 1999. It will be completed early in 2000 incorporating the results of the SEAB and National Research Council reviews, the recommendations of the FESAC, and technical understandings that came from the 1999 Fusion Summer Study.

In pursuit of the mission of the fusion energy sciences program, the program's objectives are to:

—Understand the science of plasmas, the fourth state of matter.

—Identify & explore innovative and cost-effective development paths to fusion energy.

—Explore the science and technology of energy producing plasmas, the next frontier in fusion research, as a partner in an international effort.

Following restructuring, the Fusion Energy Sciences program is focused primarily on the first two objectives and the related enabling technology research. Only a small effort on burning plasma physics and related fusion technology, e.g. materials science and engineering research on energy conversion and tritium handling, continues. The fusion program is exploring a wide range of confinement concepts other than the tokamak. Three new experiments started operation in fiscal year 1999-the Sustained Spheromak Physics Experiment (SSPX) at the Lawrence Livermore National Laboratory, the flow stabilized pinch experiment (ZAP) at the University of Washington, and the Helically Symmetric Stellarator Experiment (HSX) at the University of Wisconsin. During fiscal year 2000, the Levitated Dipole Experiment at the Massachusetts Institute of Technology will begin operation. This will bring the total number of exploratory level alternate magnetic concept experiments in the United States to 13. This important new investment in the Fusion Energy Sciences program is expected to pay dividends in the form of enhanced understanding of the interaction of plasmas with electric and magnetic fields and lead to significantly better magnetic confinement concepts over the next decade. In addition, there was increased effort on exploring the physics of a heavy ion accelerator for inertial fusion energy.

DOE and NSF issued a joint announcement for new opportunities for funding in fiscal year 2000 in September 1999 as part of the NSF/DOE Partnership in Basic Plasma Science and Engineering. In fiscal year 1999, the general plasma science program was extended to include national laboratories with a solicitation for proposals on applications of plasma science. All proposals, many of which will have evolved from Laboratory Directed R&D programs, will be competitively peer reviewed.

As a part of the ongoing restructuring of the program, the major U.S. experimental facilities—the DIII–D at General Atomics, the Alcator C-Mod at the Massachusetts Institute of Technology, and the new National Spherical Torus Experiment (NSTX) at the Princeton Plasma Physics Laboratory (PPPL)—have been operating as national facilities with research teams composed of participants from throughout the fusion science community. Program advisory committees assure scientific quality and program relevance of the research conducted at each facility. Also as part of the restructuring of the fusion program, a Virtual Laboratory for Technology has been established to improve the governance of the various, diverse enabling R&D elements through improved advocacy, coordination, and communication.

The Tokamak Fusion Test Reactor (TFTR) located at PPPL was closed down in fiscal year 1997 after 13 years of pioneering experiments yielding significant scientific results from producing actual fusion power in a laboratory. Preparations for the decontamination and decommissioning (D&D) of TFTR were initiated at PPPL in fiscal year 1999. During fiscal year 2000, PPPL will complete removal of all systems/components to be retained for future use in the program; and will prepare the remaining systems/components for dismantling, removal, and shipment offsite.

When D&D is completed, the TFTR test cell will be available for reuse by the Fusion Energy Sciences program.

At the direction of Congress, U.S. participation in ITER was successfully completed. The U.S. ITER work site in San Diego was closed and returned to the owner; U.S. secondees to the Joint Central Team returned; and the U.S. responsibilities in component R&D were discharged. Of particular note, the Central Solenoid Model Coil, the largest pulsed superconducting magnet ever built, was completed and shipped to Japan for testing. The European Union, Japan, and the Russian Federation are proceeding with a three-year extension of the ITER program to complete the design of a reduced cost and reduced objectives facility. They are now considering their preparation for decisions, within the next three years, whether and where to construct ITER. We will be involved only on the periphery of the project consistent with traditional exchange of scientific information. If the ITER parties decide to construct a burning plasma facility like ITER, the United States will then consider whether to propose to be involved.

In conclusion, the U.S. Fusion Energy Sciences program has made excellent scientific progress and has been responsive to the congressional request to restructure the program. Fusion and plasma science make a unique contribution to the nation's scientific infrastructure in the near-term and provide a vital energy option for the future. Europe and Japan are making large investments in this area. The challenge to the United States is to continue a strong scientific base program, including making effective use of existing facilities, and to sustain meaningful participation in the world program.

HIGH ENERGY PHYSICS

Fiscal Year 2001 Request—$714.7 M

High energy physics research seeks to understand the nature of matter and energy at the most fundamental level, as well as the basic forces which govern all processes in nature. DOE provides more than 90 percent of the federal support for the nation's high energy physics (also called elementary particle physics) research program. The balance is provided by the National Science Foundation (NSF). Our knowledge of the universe, the fundamental constituents of matter, and the laws of nature that underlie all physical processes, continues to grow as a result of this research.

High energy physics research not only helps us learn how the world works, it also contributes to the nation's economic competitiveness in the high-technology marketplace. High energy physics research requires accelerators and detectors utilizing state-of-the-art technologies in many areas, including fast electronics, particle detectors, high-speed computing, superconducting magnets, and high power radio-frequency devices. In these areas, high energy physics research frequently drives the technology, which not only contributes to other scientific disciplines, but also has led to many practical applications having major economic and social impacts. Who could have predicted that research that went into the building of accelerators and particle detectors and the subsequent technology would contribute so much to today's medical imaging capabilities?

The High Energy Physics program also has a history of attracting and training some of the best and brightest young minds. The training they receive prepares them for careers not just in high energy physics, but also in other disciplines as well, including computer sciences, teaching, and industrial research. It is the unique problem solving ability, learned from this scientific discipline, that makes them attractive. More than half of the Ph.D.'s trained for high energy physics find permanent employment outside the field.

Carrying out high energy physics research effectively depends on many elements including the availability of forefront experimental capabilities, effective use of specialized facilities, and the availability of new and upgraded facilities to take advantage of new technologies and research opportunities. The Department supports two major high energy physics accelerator centers—the Fermi National Accelerator Laboratory (Fermilab) and the Stanford Linear Accelerator Center (SLAC). Each of these laboratories provides unique capabilities and is operated as a national facility available to qualified experimenters around the nation and abroad on the basis of the scientific merit of their research proposals. Approximately 2,000 U.S. scientists and about 500 foreign scientists work at these facilities at any given time.

Experimental and theoretical researchers from more than 100 universities conduct about 75 percent of HEP research, with the remainder being done by national laboratory staff. In general, the laboratories and universities perform different, but complementary, activities. University scientists provide the primary intellectual base for the program, performing experimental research at accelerators and non-ac-

celerator facilities, technology R&D, and theoretical research. University grantees are selected and retained based on the quality, appropriateness, and performance of their research activities. All research proposals received are subjected to a rigorous multi-stage review.

National laboratories primarily house the major accelerator facilities at which university scientists perform their research. In addition, the laboratories provide the related technical and scientific expertise, as well as day-to-day liaison between university researchers, laboratory experts, and management. Research requiring the use of a facility at one of the laboratories is reviewed extensively by the laboratory and its Program Advisory Committee (PAC), another form of peer review. The Department carries out its oversight responsibilities by conducting annual reviews of the laboratories' scientific programs. In addition, the Department tracks project progress against budget and schedule milestones using semiannual project reviews.

Fermilab is home to the world's highest energy superconducting accelerator, the Tevatron, which provides both fixed target and colliding beam research programs. The colliding beam research program has two major detector facilities, the Collider Detector at Fermilab (CDF) and the D-Zero Detector, which complement each other in their different technical capabilities. These two collaborations continue to produce new scientific knowledge. For example, the CDF collaboration at Fermilab observed the existence and properties of the B meson containing a charmed quark—completing the theoretically predicted family of B mesons; and another team observed direct violation of Charge-Parity (CP) symmetry in the decays of K mesons. Measurements such as these will improve even more with data from the upcoming run of the Tevatron with the newly upgraded Main Injector.

Construction of the Fermilab Main Injector project was completed in fiscal year 1999 on schedule and within budget. The final data collection with the Fermilab 800 GeV fixed-target program is being completed in fiscal year 2000. In fiscal year 2001, the prime focus of the Fermilab program will turn to research using the Tevatron Collider with the higher luminosity of the new Main Injector. Also at Fermilab, design of the NuMI (Neutrinos at the Main Injector) project got underway in fiscal year 1998 and is proceeding. The project will provide a new neutrino beamline aimed at the Soudan Underground Laboratory in Soudan, Minnesota where the large MINOS detector will be installed to search for and study neutrino oscillations.

In addition, Fermilab continues to play an active role in the Large Hadron Collider (LHC). Fermilab is the host and center of the U.S.Compact Muon Solenoid (CMS) detector effort of university and laboratory scientists, and host and center of the U.S. LHC accelerator collaboration, with specialized expertise in the design and fabrication of superconducting magnets.

At the SLAC, the Stanford Linear Collider (SLC), the world's only high energy linear collider, continued to achieve record high luminosities in positron-electron collisions. The B-factory at SLAC was completed on schedule and within budget in fiscal year 1999. In fiscal year 2000 the B-factory was brought into full operation. Some 27 DOE-funded universities participate in large international collaborations doing experiments at SLAC. The experiments involve the BaBar detector and other smaller detectors for fixed target experiments. These experiments are investigating fundamental constituents of matter such as the b quark. In particular, the BaBar detector is being used to study the nature of Charge-Parity (CP) Violation in the B meson system. Researchers from universities and laboratories conducting research at SLAC are in the process of analyzing the large amounts of data collected. In fiscal year 2000, work will continue on R&D in support of a future linear collider. Participation with NASA and university scientists to fabricate a non-accelerator-based experiment, the Gamma-ray Large Area Space Telescope (GLAST), is also planned.

The Alternating Gradient Synchrotron (AGS) at Brookhaven National Laboratory (BNL) was transferred in fiscal year 1999 to the Nuclear Physics program to be operated as the injector for RHIC. Operation of the AGS for the high energy physics program in fiscal year 2001 will be on an incremental cost basis. Brookhaven is also a key participant in the LHC project as host and center of the U.S. ATLAS detector collaboration of university and laboratory scientists, as well as a participant in the U.S. accelerator collaboration. BNL's Accelerator Test Facility (ATF), a small, low energy electron linac, has achieved one of the brightest electron beams in the world. It is used by universities, national laboratory groups, and industry for testing new advanced accelerator concepts.

During the past year, progress continued to be made on the technical components for the LHC and many management details were refined. Fabrication of LHC subsystems and components by U.S. participants began in fiscal year 1998. Funding was provided in fiscal year 1996 ($6,000,000) and fiscal year 1997 ($15 million) for preliminary R&D, design and engineering work on the subsystems and components being proposed for inclusion in the agreement with CERN. This funding was essen-

tial in order to provide the cost and technical bases for the proposed U.S. responsibilities in LHC, and to be ready for rapid start to satisfy the anticipated timetable for the project. $70 million was provided in fiscal year 2000, and $70 million will be provided in fiscal year 2001 to support continuation of these R&D and design efforts, and the continuation of fabrication of those subsystems and components specified in the agreements with CERN.

NUCLEAR PHYSICS

Fiscal Year 2001 Request—$369.9 M

The primary goal of nuclear physics research is to understand the structure and properties of atomic nuclei and the fundamental forces between the constituents that form the nucleus. Nuclear processes determine essential physical characteristics of our universe and the composition of its matter.

The Nuclear Physics program continues to be a vital source of trained people for fundamental research and for applied technology areas. The program supports the graduate training of approximately 450 students per year, and typically 100 doctorates in nuclear physics are awarded each year in DOE-supported nuclear physics programs. A majority of these highly trained researchers will take positions in high-technology private industry. In fiscal year 2000, the Nuclear Physics Program initiated an Outstanding Junior Investigator (OJI) program to recognize and support young promising scientists pursuing nuclear physics research.

Many future nuclear physics investigations will study questions related to the quark presence in composite nuclei. Until recently, the fundamental understanding of nuclear properties has been based on the concept of a nucleus composed of protons and neutrons that interact through weak, strong, and electromagnetic forces. It became clear that achieving a real knowledge of many nuclear properties depends on understanding nuclear structure based on quarks, and particles called gluons that bind the quarks together. Quarks and gluons are the building blocks of protons and neutrons (nucleons). The Nuclear Physics program works in close coordination with the Nuclear Physics program at the NSF and, jointly with NSF, charters the Nuclear Science Advisory Committee (NSAC) to provide advice on scientific opportunities and priorities.

Studies of nuclear structure require ultra-high resolution "microscopes," accelerators that produce particle beams of various energies, depending on the problems to be studied. The cost and complexity of these machines requires the creation of national Scientific User Facilities such as the Department has established at its laboratories.

Research programs at the Thomas Jefferson National Accelerator Facility (TJNAF), formerly the Continuous Electron Beam Accelerator Facility (CEBAF), are studying effects due to the presence of quarks in nucleons in the nucleus. Two principal focuses of these studies are to continue to develop an understanding of how the "spin" of a nucleus originates in the quarks, and how the size of a quark cluster in a nucleus affects the strength of the interaction of that cluster with other nucleons in the nucleus. TJNAF has consistently delivered highly polarized electron beams for experiments. Precision measurements performed in fiscal year 1999 with TJNAF's world-class polarized electron beams provide important new insight into the role of the strange quark in determining the fundamental properties of the nucleon. As of fiscal year 2000, twelve experiments will have been completed in Hall C and ten experiments will have been completed in Hall A at TJNAF. The complex large-acceptance spectrometer in Hall B is complete and the research program is well underway. By the end of fiscal year 2001, three major experiments will have been completed, and partial data will have been accumulated on many more. TJNAF scientists are also participating in the assembly of a new detector for the "GO" experiment, in cooperation with the National Science Foundation. TJNAF involves a users group of 1,460 scientists from 80 institutions, in the U.S. and 36 foreign countries.

In fiscal year 1999, the Relativistic Heavy Ion Collider (RHIC) construction project at Brookhaven National Laboratory (BNL) was completed on schedule and within budget. RHIC is a unique facility whose colliding relativistic heavy ion beams will permit exploration of hot, dense nuclear matter and recreate the transition from quarks to nucleons, the quark-gluon plasma, that characterized the early evolution of the universe. Ever since quarks and gluons were discovered, theorists have looked to the discovery of the quark-gluon plasma as the crowning triumph of Quantum Chromo-Dynamics. Studies with colliding heavy ion beams at RHIC will provide researchers with their first laboratory opportunity to directly explore this new regime of nuclear matter and nuclear interactions that up to now has only been studied theoretically. On February 10, 2000, scientists at CERN announced the accumula-

tion of significant pieces of evidence, though indirect, for the existence of the quark-gluon plasma. This is very encouraging news for the research program at RHIC.

Fiscal year 2001 will be a critical year, as all four RHIC detectors reach their full potential for studies of the expected new forms of nuclear matter that will be created in the heavy ion collisions. Detector fabrication, including the additional experimental equipment recommended by NSAC for purposes of particle detection and data analysis, will be largely completed by fiscal year 2001, as scheduled. Four experiments (STAR, PHENIX, BRAHMS and PHOBOS) involving over 950 researchers and students from 90 institutions and 19 countries will pursue a vigorous research program at RHIC.

Another new generation facility, the Holifield Radioactive Ion Beam Facility (HRIBF) at Oak Ridge National Laboratory, is now producing previously unavailable, highly radioactive, short-lived, nuclear beams to study important stellar processes and nuclear structure at limits of stability. In fiscal year 1999, HRIBF completed a series of experiments that provide input to refined astrophysical calculations for the breakout from the Carbon-Nitrogen-Oxygen (CNO) cycle responsible for element production beyond oxygen. An expanded series of measurements will be carried out in fiscal year 2000–2001 as new beam species are developed and beam intensities increase. Radioactive ion beams, in addition to the stable beams normally provided, are also being produced at the ATLAS accelerator at Argonne National Laboratory and the 88-inch Cyclotron at Lawrence Berkeley National Laboratory. These laboratories are pursuing research as well as developing new techniques for the generation of radioactive beams. The experience gained and ideas generated at all three laboratories will provide important input to the design of a proposed new rare isotope facility presently being studied by the Nuclear Physics program.

In fiscal year 1999, the NSAC Isotope Separation On-Line (ISOL) Task Force, identified an optimal configuration for a next generation Rare Isotope Accelerator (RIA). RIA will produce short-lived nuclei (with lifetimes of greater than a thousandth of a second) in nuclear reactions using intense beams of stable nuclei; these nuclei will then be extracted and accelerated in a post-accelerator to be used in experiments. RIA would provide unique, world-class capabilities for the low energy, nuclear astrophysics, and nuclear structure communities for several decades. R&D and preconceptual design activities will continue in fiscal year 2000 and fiscal year 2001.

In fiscal year 2001, the BLAST detector at the MIT/Bates Linear Accelerator Center facility will be completed and will initiate commissioning for a research program in fiscal year 2002–2004 studying the structure of the nucleon and few-body nuclei. Upon completion of the BLAST research program in fiscal year 2004, MIT and DOE have agreed that the Bates facility will begin a two-year phaseout.

The solar neutrino problem remains one of the great challenges in astrophysics. The predicted rate of neutrino production by the sun is significantly higher than the observed rate. There are two possible explanations for the discrepancy. Either our understanding of solar burning is very wrong, or the neutrino has a small mass, contradicting the long-held belief that it is massless. The Sudbury Neutrino Observatory (SNO) was created to study this problem and the processes that control our sun. This observatory consists of a 40 foot diameter plastic (acrylic) vessel holding 1,000 tons of heavy water that is the solar neutrino detector. SNO is located 6,800 feet underground. The detector water-fill was completed in fiscal year 1999 and data taking is underway. The SNO detector's first results are expected in fiscal year 2001.

MULTIPROGRAM ENERGY LABORATORIES-FACILITIES SUPPORT

Fiscal Year 2001 Request—$33.9 M

Fulfillment of the DOE's science and technology goals depends heavily on the existence and operating efficiency of the five multiprogram SC laboratories. The five multiprogram energy laboratories are: Argonne National Laboratory-East, Brookhaven National Laboratory, Lawrence Berkeley National Laboratory, Oak Ridge National Laboratory, and Pacific Northwest National Laboratory. These laboratories are government-owned, contractor-operated (GOCO) and have over 1,100 buildings with 14.3 million gross square feet of space with an average age of 35 years and an estimated replacement value of over $9,000 million. Total operating funding for these laboratories is over $3,000 million a year. The Office of Science manages this program to provide a comprehensive, prioritized and equitable approach to its stewardship responsibility for the general purpose support infrastructure of these laboratories.

Portions of the infrastructure of these laboratories are old, deteriorating, and, in some cases, obsolete. Improvements are needed to comply fully with the environ-

ment, safety and health requirements in effect today as well as to meet everyday operational needs.

SC established the Multiprogram Energy Laboratories-Facilities Support (MEL–FS) program in 1981 to provide a systematic approach to its stewardship responsibility for the general purpose infrastructure of these laboratories. The MEL–FS program helps to preserve the government's investment in infrastructure and to maintain infrastructure integrity in a reasonable and economic manner at these laboratories. Beginning in fiscal year 2000, this program includes funding of Oak Ridge Operations Office Site Landlord activities.

The MEL–FS program supports line item construction projects to refurbish and replace inadequate general purpose facilities and infrastructure. Capital investment requirements are identified in laboratory Institutional Plans that address needs through the year 2004 based on expected programmatic support. The projected needs through the period total over $450 million. Of this amount, 65 percent is to rehabilitate or replace buildings; 21 percent is for utility projects; and 11 percent for ES&H projects. All projects are first ranked using a prioritization model that takes into account risk, impacts, and mission need. The projects that have ES&H as the principal driver are further prioritized using the Risk Prioritization Model from the DOE ES&H and Infrastructure Management Plan process.

The fiscal year 2001 MEL–FS budget request provides for the continuation of three on-going projects and five new projects. The three projects that are ongoing in fiscal year 2001 are: the Fire Safety Improvements, Phase IV (TEC $8.4 million) at Argonne which will bring 30 major facilities into compliance with the Life Safety Code and the National Fire Alarm Code; the Sanitary System Modifications, Phase III (TEC $6.5 million) at Brookhaven which will replace or rehabilitate approximately 9,900 feet of existing deteriorated sewer piping, replace the sewage digester, connect five facilities to the sanitary system, and make other modifications to reduce discharges to the environment; and the Electrical Systems Upgrade (TEC $5.9 million) at Oak Ridge which will include: replacing overhead feeders; installing advanced protective relaying capabilities at major substations; and replacing major switchgear and transformers.

Two new starts for fiscal year 2001 are proposed at Brookhaven. The Groundwater and Surface Water Protection project (TEC $6 million) will begin to reduce a backlog of ground and surface water protection projects per commitments to regulators. These include: proper closure of inactive supply and injection wells; runoff control for the surplus material storage yard; containment and runoff control for the radioactive material storage yard; replacement of 12 hydraulic elevator cylinders; removal of 22 underground fuel oil tanks; replacement of radioactive waste tanks with secondarily contained tanks. The Electrical Systems Modifications, II project (TEC $6.7 million) will be the second phase of the modernization and refurbishment of the laboratory's deteriorating 50 year-old electrical infrastructure.

Two new starts for fiscal year 2001 are proposed at Oak Ridge. The Fire Protection System Upgrade project (TEC $5.9 million) will: replace deteriorated, obsolete systems with more reliable fire alarm and suppression capabilities; replace the single 16-inch water main in the east central section of ORNL with a looped system; and extend coverage of automatic alarm systems and sprinkler systems to areas not previously served. The Facilities HVAC Upgrade project (TEC $7.1 million) will provide improvements to aging HVAC systems (average age 38 years) located in the thirteen buildings which comprise ORNL's central research complex and additions and improvements to the chilled water distribution system.

The Site-wide Water Distribution System Upgrade project (TEC $8.3 million) is a proposed new start for fiscal year 2001 at Lawrence Berkeley National Laboratory that will rehabilitate the Lab's High Pressure Water (HPW) System. This activity will: replace all 1.4 km of cast iron pipe with ductile iron pipe; install cathodic protection; replace and enhance pressure reducing stations; add an emergency fire water tank to serve the East Canyon; and provide new liners and seismic upgrades for two existing emergency fire water tanks.

Four projects are scheduled for construction completion in fiscal year 2001: the Central Supply Facility and the Electrical Systems Upgrade, Phase III at Argonne; the Electrical Systems Modifications—Phase I at Brookhaven; and the Building 77 Rehabilitation at Berkeley.

The direct funding for the American Museum for Science and Energy (AMSE) under the Oak Ridge Landlord activities will end in fiscal year 2000. Museum operation is transferred to Oak Ridge National Laboratory where alternative funding mechanisms are being developed, including support by private or industrial partners, and possibly, an admission fee for adults.

ENERGY RESEARCH ANALYSES

Fiscal Year 2001 Request—$1.0 M

The mission of the Energy Research Analyses (ERA) program is to conduct technical assessments of the Department's civilian research and development programs and to provide direction to future research and development activities. ERA also conducts science policy analyses, and coordinates the development of the Office of Science Strategic Plan and the DOE Science Portfolio.

The fiscal year 2001 budget request will provide funding for peer reviews of projects in the Office of Science, Environmental Management, and Energy Efficiency to continue to improve the quality and relevance of DOE research and development. Other activities will include evaluation of critical planning and policy issues of DOE science and technology using expert groups at the National Academy of Sciences, the JASON group, etc., as deemed appropriate.

SCIENCE PROGRAM DIRECTION

Fiscal Year 2001 Request—$141.2 M

This program provides the federal staffing and associated funding required to provide overall direction of activities carried out under the SC programs cited in this testimony. This funding also provides the necessary support to the Director of SC to carry out SC's responsibilities under the Department of Energy Organization Act (Public Law 95–91) and as mandated by the Secretary. These responsibilities include: providing advice on the status and priorities of the Department's overall research and development programs and on the management of the Department's multipurpose laboratories; developing research and development plans and strategies; supporting university and science education; and ensuring the institutional health and overall site integration at three multi-program field offices. This program also provides program-specific staffing resources at the Chicago, Oakland, and Oak Ridge Operations Offices directly involved in executing SC programs within the field complex. In fiscal year 2001, there will be continued emphasis on integrated business management technology initiatives and supporting the ongoing efforts begun in fiscal year 2000 related to succession planning and increasing diversity of the workforce. In addition, resources will be devoted to enhance the Spallation Neutron Source Project Office management structure; fulfill waste management responsibilities; and build and sustain a talented technical workforce through the Department's Scientific and Technical Workforce Retention and Recruitment effort.

The Program Direction subprogram has been divided into four categories: Salaries and Benefits, Travel, Support Services, and Other Related Expenses, the latter including the Working Capital Fund. Support Services refers to support services contracts that provide necessary support functions to the federal staff, such as technical support, computer systems development, travel processing, and mailroom activities. Other Related Expenses refers to other administrative costs of maintaining federal staff, such as building and facility costs and utilities in the field, information technology expenses, and training. The Working Capital Fund includes centrally provided goods and services at headquarters, such as supplies, rent and utilities.

The Field Operations subprogram funds the core management and administrative federal staff and is the central funding source for the infrastructure requirements at three of the Department's multiprogram operations offices: Chicago, Oakland and Oak Ridge. The staff is responsible for the full range of administrative functions critical to the success of all programs executed through these offices, including fundamental science, energy research, national security, and environmental management. By fiscal year 2001, the federal workforce sponsored by this subprogram will be 5.2 percent less than mid fiscal year 1999; therefore, SC plans to support technology investments and integrate business management systems aimed at providing coordinated, efficient and effective services and process improvements.

The Science Education subprogram focuses primarily on undergraduate research experiences at the national laboratories. Science Education also supports the Albert Einstein Distinguished Educator Fellowships, the National Science Bowl, and the DOE Institute of Biotechnology, Environmental Science, and Computing for Community Colleges. The Energy Research Undergraduate Laboratory Fellowships, formerly known as the Laboratory Cooperative Program, are designed to provide educational training and research experiences at DOE laboratories for highly motivated undergraduate students. These opportunities complement academic programs and introduce students to the unique intellectual and physical resources present at the DOE laboratories. Appointments are available during the spring, summer, and fall terms.

In 1991, as a national initiative, the National Science Bowl was developed to encourage high school students from across the nation to excel in math and science and to pursue careers in those fields. It provides students and their teachers a forum to receive national recognition for their talent and hard work. DOE is committed to math and science education to help provide a technically trained and diverse workforce for the nation. The National Science Bowl is a highly publicized academic competition among teams of high school students who answer questions on scientific topics in astronomy, biology, chemistry, mathematics, physics, earth, computer and general science. Since its inception, more than 60,000 high school students have participated in regional tournaments leading up to the national finals.

The Albert Einstein Distinguished Educator Fellowship Act of 1994 was signed into law in November 1994. The law gives DOE responsibility for administering the program of distinguished educator fellowships for elementary and secondary school mathematics and science teachers. This program supports outstanding teachers of science and mathematics, who provide insights, extensive knowledge and practical experience to the Legislative and Executive branches.

The DOE Institute of Biotechnology, Environmental Science, and Computing for Community Colleges is a collaboration between DOE (and five of its multiprogram laboratories) and the American Association of Community Colleges. It is designed to provide educational training and research experiences at five DOE national laboratories for highly motivated community college students. Each laboratory will offer a ten-week summer experience for selected students from a regional consortium of community colleges partnering with DOE and that laboratory.

There is a national need to maintain worldwide leadership in science and technology and to stay competitive in critical research areas such as high energy and nuclear physics, computational science, and renewable energy technologies. Our outstanding national laboratories help to drive the progress of science and technology development in the United States. To replenish our stocks of scientists and engineers for the next century, we must invest in our nation's youth to encourage interest in science and scientific careers. A proven method to achieve this is by introducing students to the excitement of scientific research through exposure to the national laboratories. Historically, over two-thirds of undergraduates who have participated in DOE programs have gone on to graduate school in disciplines directly related to DOE missions.

The SC staff includes scientific and technical personnel as well as program support personnel in the areas of budget and finance; general administration; grants and contracts; information resource management; infrastructure management; construction management; safeguards and security; and environment, safety and health.

Through Program Direction, SC Headquarters continues to achieve technical excellence in its programs despite managing one of the largest, most diversified and most complex basic research portfolios in the Federal Government with a relatively small Federal and contractor support staff.

ENERGY SUPPLY—TECHNICAL INFORMATION MANAGEMENT

Fiscal Year 2001—$9.3 million

The Technical Information Management (TIM) program provides timely, accurate technical information to DOE's researchers and the public by collecting, preserving, and disseminating scientific and technical information, the principal product resulting from DOE's multi-billion dollar research and development programs. The TIM program maximizes the return on DOE's $7 billion annual R&D investment by collecting, preserving, and disseminating information resulting from these research programs. This information is recorded in three forms: journals, technical reports, and pre-prints. The TIM program has produced world-class web-based systems to provide full-text, electronic access to all three sources of information. The DOE Information Bridge (www.doe.gov/bridge) provides access to 70,000 technical reports. The newly launched PubScience (www.doe.gov/pubsci) provides electronic access to over 1,000 physical science journals—analogous to the capability PubMed provides in the life sciences. Fiscal year 2001 activities will include expanded coverage of science journals and a fully operational, searchable pre-print network. Also, the TIM program will continue its important role in obtaining foreign research information through two international information exchanges and, for the first time, will provide access to this information in electronic full-text. Finally, the TIM program will continue reengineering systems to provide enhanced protection and secure electronic access to a 50-year old repository of classified and sensitive R&D information.

CLOSING

The significant increase in the fiscal year 2001 budget request for the Office of Science recognizes the critical role that fundamental knowledge plays in achieving the DOE missions and for the general advance of the nation's economy and the welfare of its citizens. The SC request supports thousands of individual research projects at hundreds of research facilities across the U.S., primarily at our national laboratories and research universities. In addition, the fiscal year 2001 request will support continuing construction of the Spallation Neutron Source; increasing investments in nano-scale science to make significant contributions to the interagency initiative in nano-technology; implementing advanced computational modeling and simulation for DOE's broad scientific challenges; investigating the workings of the microbial cell for DOE applications; improving the utilization of our major scientific user facilities; and updating the skills of our technical workforce.

However, it must be noted that the reduction of fiscal year 2000 funds for contractor travel is having a significant impact on our ability to conduct forefront research in the fundamental sciences. Travel to meetings is a traditional mechanism by which the results of research are delivered to, and actively discussed by, the scientific community. Failure to participate lessens the impact of the basic research investment in the federal laboratory system. Reductions in contractor travel have hampered these exchanges and have impacted SC's ability to recruit young scientists to the national laboratories. In addition, DOE has been pursuing the construction of major new scientific user facilities, such as the SNS, as collaborations between several laboratories. Successful completion of these projects require large amounts of contractor and DOE travel. Proper oversight of these activities through major project reviews also requires use of contractor travel funds, and is negatively impacted by restrictions on such funds. Finally, our partnership with CERN in construction of the Large Hadron Collider, combined with the need to send researchers abroad to participate in experiments at forefront research facilities in other nations, required a significant level of foreign travel. I look forward to working with the Congress to address the unique situation for SC laboratory researchers with regard to travel.

On behalf of the Administration and the Department, I am pleased to present this budget for the Office of Science and welcome the challenge to deliver results.

This concludes my statement. I would be happy to answer your questions.

U.S. DEPARTMENT OF ENERGY, FISCAL YEAR 2001 CONGRESSIONAL BUDGET REQUEST, OFFICE OF SCIENCE

[Dollars in Millions]

Program	Fiscal year		
	1999 Comparable appropriation	2000 Comparable appropriation	2001 Request
Science	$791.7	$779.4	$1,015.8
Basic Energy Sciences	425.9	434.1	445.3
Biological and Environmental Research	220.6	247.8	247.3
Fusion Energy Sciences	153.5	127.9	182.0
Advanced Scientific Computing Research	682.7	703.8	714.7
High Energy Physics	338.5	355.8	369.9
Nuclear Physics	32.2	33.1	33.9
Multiprogram Energy Labs-Facilities Support	1.0	1.0	1.0
Energy Research Analyses	135.0	131.7	141.2
Science Program Direction	81.5	.....	.....
SBIR/STTR	2,862.6	2,814.6	3,151.1
Subtotal	(13.8)	.....	.....
General Reduction for Use of Prior Year Balances	(7.6)	.....	.....
Superconducting Super Collider	2,841.2	2,814.6	3,151.1
Energy Supply:			
Technical Information Management	8.8	8.6	9.3

U.S. DEPARTMENT OF ENERGY, FISCAL YEAR 2001 CONGRESSIONAL BUDGET REQUEST, OFFICE OF SCIENCE—Continued

[Dollars in Millions]

Program	Fiscal year		
	1999 Comparable appropriation	2000 Comparable appropriation	2001 Request
SBIR/STTR	4.9	.....	.....
General Reduction for Use of Prior Year Balances	(0.3)	.....	.....
Total	13.4	8.6	9.3

STATEMENT OF DAN W. REICHER

Senator DOMENICI. Thank you very much. We are going to proceed with each panel and then ask questions.

Mr. Reicher?

Mr. REICHER. Thank you, Mr. Chairman. Rather than read an oral statement, if you have this in front of you, I would like to go through these quickly. I would like to first briefly address an issue that I think is on everyone's mind today, and that is the growing gap between oil production and oil consumption in the United States. And I will just quickly make the point that programs in our Office of Energy Efficiency and Renewable Energy can help in addressing that gap.

ALTERNATIVE ENERGY SOURCE FROM OIL

If you would turn to page two. Whether it is replaced oil from transportation and industry with biofuels and biochemicals, whether it is replacing oil with natural gas for both heating and electricity, whether over the long haul looking to hydrogen as an ultimate energy source, or most importantly, perhaps, what we are doing in improving the efficiency of cars and trucks, radically increasing the fuel efficiency, through the partnership for a new generation of vehicles, our programs can help.

So I think it is important that we can contribute a lot to that vexing national problem that Mr. Dorgan referred to in his opening statement.

PROGRESS IN RENEWABLE ENERGY

Now I would like to review the progress we have made and the challenging work that remains to be done in some of our programs. If you turn to page two, some exciting progress has been made. Wind energy cost 40 cents a kilowatt hour, Mr. Chairman, in 1979. It is down to 4 to 6 cents a kilowatt hour in the year 2000. And with continued R&D support, we think we can get it down by 2003 in the 2½ to 4½ cent per kilowatt hour range.

WIND

From coast to coast and border to border, the United States is blessed with a phenomenal wind resource. If you turn to page three, you will see what I mean. This is a ranking of the States with the best wind resources in the United States.

Interestingly, Mr. Chairman, California, typically thought of as the wind State, does not even get into the top 15. It is number 17 on the list. States like North Dakota, Montana, New Mexico, Idaho, even New York, has a better resource. And North Dakota alone has 2½ times the wind resource of Germany, which now leads the world in wind investment. And wind has literally become a new cash crop for farmers.

If you turn to the next page, this is a major wind development in Iowa, over 100 megawatts recently installed. And on this farm alone that is pictured, the farmers are being paid between $2,000 and $3,000 per turbine per year for the use of their land. So that $8,000 to $12,000 payment for just these four turbines can literally mean the difference between profitability and losing the family farm for farmers in many parts of the country.

Secretary Richardson on Friday is going to break ground on a major new wind development in Upstate New York in dairy country. We expect to see—we are going to see many, many more across the Northeast, the Midwest, the Dakotas and west from there, very interesting opportunities all across the United States.

And the sale of wind turbines has grown phenomenally internationally. If you turn to page five, Mr. Chairman, this is a very interesting comparison. And it tells the following story: That in 1999, more new megawatts of wind were installed in the world than new megawatts of nuclear.

Both technologies are critical to our energy mix. The point is that wind technology now has gotten to a point where we are installing it in the thousands and thousands of megawatts worldwide. And we had the best year on record in the United States last year with about 1,000 megawatts installed.

GEOTHERMAL

Turning to another great power source on page six, geothermal energy has dropped from 15 to 16 cents per kilowatt hour in 1985 to 5 to 8 cents today. And with continued R&D support, we see it going to 4 to 6 cents in 2003. And like wind, we have a very rich resource in the United States, particularly in the West. If you would turn to page seven, please, you will see the top three States, Nevada, California and Utah. But you will see a variety of other States with major resources, Idaho, Hawaii, New Mexico, Oregon, South Dakota, Texas and Wyoming. And we think that we can dramatically increase the use of this excellent energy source, both for electricity and for heat across the western United States.

SOLAR

We have also seen stunning progress with solar, if you would turn to page eight. Solar electric costs $1 per kilowatt hour in 1980, $1 per kilowatt hour. It is down to around 20 cents per kilowatt hour today. And with continued R&D support, we see it going to around 10 cents in 2005. This is a result in part of the great work done by the national labs, the National Renewable Energy Laboratory, Sandia, in particular.

And solar is now in use in all kinds of settings all over the United States and not just in the sunny parts of the country. If you turn to page nine, Mr. Chairman, Times Square in New York, a 50-

story office building has recently been completed. The upper 20 floors of that building are wrapped in solar panels, replacing the skin of the building. So it is a partially self-powered building. It is also powered with fuel cells on the second floor.

To the left of that is my home at 8 Heskus Street, where I have put solar panels on my roof a year ago. I can proudly report today, after 1 year of use, that my average electricity bill is $1 per day for the year, including air conditioning in my home in the Washington, DC, area.

INTERNATIONAL SOLAR INDUSTRY

Unfortunately, Mr. Chairman, the United States is losing our lead in the multi-billion dollar solar industry to the Japanese, if you turn to the next page. Between 1998 and 1999, the Japanese surpassed us in terms of world market share in this multi-billion dollar market. Government support there is about three times what it is in the United States.

BIOMASS

Another renewable with huge opportunities and great adaptability is, of course, biomass. If you would turn to page 11. Mr. Chairman, we know how to make all sorts of things, and starting with trees, grasses, crops, residues, animal waste and municipal solid waste. We have developed through support from this subcommittee, a number of technological conversion processes. And as you see on the right, we can make fuels, electricity, heat and a huge array of chemicals.

Biomass now represents three percent of U.S. primary energy. It is a great emerging cash crop for farmers, for ranchers, for foresters. Mr. Lugar pushed successfully through the Senate in late February, a bill that would stimulate the growth of this industry in a very, very important way. And the President has set a goal to triple United States use of bioenergy by 2010.

Two quick examples. On page 12, in Indiana and in several other parts of the country, coal fired utilities are now mixing their goal stream with biomass to make use of a local resource, to cut pollution, and to extend the life of these coal-based power plants.

Down in Louisiana, Mr. Chairman, a new plant is under construction that will make ethanol, 20 million gallons a year, from waste from the sugar cane industry that that industry is now paying to get rid of.

I visited New York State yesterday. There they will be getting under construction with a new ethanol plant that will make ethanol from municipal solid waste, 10 million gallons a year.

HYDROELECTRIC

Now, I need to make a very important point, if you would turn to page 13. And I think this is responsive to your opening statement. Maturing an energy source requires both time and money. In the case of hydroelectric, we have been at it since about 1903 with major investments of about $50 billion in today's dollars in dams across the United States. In the case of nuclear, we have been at it for about 50 years with investments in the $25 billion

to $50 billion a year range. With renewables, Mr. Chairman, we have been at it for 20 to 25 years with less than $13 billion.

We are between 2 and 3 percent of U.S. electricity that comes from renewables. And we have seen almost a 20-percent growth in the last year in renewable-generated electricity versus a 1.3 percent overall electricity growth in the same year.

Senator DOMENICI. Twenty percent is of what?

Mr. REICHER. Twenty percent—the actual number is 18 percent of—we saw about 18-percent growth in U.S. electricity coming from renewables, from 71.5—I can give you the numbers, but that is the approximate number, 18-percent growth between 1998 and 1999.

[The information follows:]

ENERGY INFORMATION ADMINISTRATION ESTIMATES OF INDUSTRY RENEWABLE ENERGY ELECTRICITY GENERATION 1997–1999

[Generation in Terawatt Hours, thousands of Gigawatts, billions of Kilowatts]

	Fiscal years		
	1999 [1]	1998	1997
Geothermal	13.904	14.726	14.569
Bioenergy	62.819	53.012	54.647
Wind	4.213	2.988	3.222
Solar [2]	1.143	0.856	0.869
Renewable Subtotal	82.079	71.582	[3] 73.307
Total Electricity	3,662.300	3,617.900	3,494.200

[1] Based on preliminary EIA 1999 table 60 net generation data, finals may vary slightly.
[2] Solar 99 estimated based on prior year PV trends.
[3] Non-hydro renewables.

Note: Notable Changes in electricity generation: Electricity generation grew 1.0 percent in 1999; Renewables grew from 2 percent of all electricity generation in 1998 to 2.24 percent in 1999; Renewables' generation grew 15 percent in 1999, from 71.6 GW to 82.1 GW.

BUDGET REQUEST

Mr. REICHER. Now, we have submitted a budget request, Mr. Chairman, that we believe is critical to advancing clean power technologies in the way we have supported other technologies. And if you turn to page 14, I will not go through this chart other than to point out that, whereas we have asked for a 32-percent increase between 2001 and 2000, we actually saw a fairly substantial cut between 1999 and 2000. So that increase relative to 1999 would be about 24 percent.

DISTRIBUTED ENERGY RESOURCES

Now I would like to highlight just one more important element of our work, and that is on page 15. Mr. Chairman, increasingly this country is moving to what are called distributed energy resources, moving the generation source closer to the end user, closer to industry, closer to commercial buildings, closer to homes. These include gas-fired microturbines, reciprocating engines, fuel cells, and include renewables like photovoltaics and wind.

And in this picture you will see a new fuel cell that General Electric will start selling in 2001 that will provide electricity and heat for a home. And we see this as an exciting new opportunity to gen-

erate electricity in this country, also very useful for ensuring the reliability of our electricity system. And it has environmental and economic benefits as well.

IMPROVED MANAGEMENT

Finally, I would like to emphasize that underlying all this work on clean energy is what I believe to be improved management of our office. And I appreciate your compliments in your opening statement. If you turn to the final page, we have increased competition and merit review in our programs between 1996—and you will see this on this chart—from 24 percent to 88 percent.

This is competition for the discretionary financial assistance. This is something you told us you wanted us to do, as they did in the House. And I think we have come quite a distance.

And the National Academy of Public Administration did a multimonth review of the management of our office. And while, Mr. Chairman, we did not get an A, they definitely told us we are moving in the right direction and complimented the reforms that we have made, and they are many.

NO-YEAR MONEY

That leads me to my final point. And I guess it is in a sense almost a plea. We think we have improved our management to the point that the subcommittee should provide us with funds on a no-year basis instead of the 1-year funds that you moved us to in fiscal year 1998.

No-year money is a far more flexible way to pursue R&D. The 1-year funding that you gave us beginning in 1998 has severely restricted our work and made for decision making that I do not think is in the ultimate interest of the technologies and the companies and the laboratories that carry out this work. So I urge you to consider returning us to no-year money.

Thank you, Mr. Chairman.

Senator DOMENICI. Thank you very much, Mr. Reicher.

[The statement follows:]

PREPARED STATEMENT OF DAN W. REICHER

INTRODUCTION

Mr. Chairman and members of the Subcommittee, I am pleased to have the opportunity to appear before you today to discuss the Energy and Water Development portion of the fiscal year 2001 budget request for the Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE).

As we begin a new decade—and a new millennium—the Office of Energy Efficiency and Renewable Energy's mission of advancing clean energy technologies, including energy efficiency, renewable energy and natural gas, will play an increasingly critical role in securing our energy future, improving our environment and maintaining our economic growth. EERE leads the nation in the research, development, demonstration, and deployment of affordable, advanced energy efficiency and renewable energy technology and practices, and, together with the Office of Fossil Energy advances natural gas research, development and demonstration.

Mr. Chairman, in my testimony today, I plan to cover the following areas. First, I will discuss energy trends that have emerged over the last decade and that will drive great change into the next. Second, I will speak about how our EERE programs as relayed in our strategic plan will help to meet these emerging challenges, and in particular, I will discuss some recent exciting technology improvements and the opportunities and challenges still facing us. Finally, I will specifically highlight the fiscal year 2001 budget request as it relates to the EERE programs within the

jurisdiction of this subcommittee, primarily renewable energy technologies and advanced energy production, storage and transmission systems. The rest of the EERE budget is funded under the Interior and Related Agencies appropriations account and focuses on energy efficiency in industry, transportation and buildings.

Mr. Chairman, as I noted, several energy trends have emerged over the last decade that will drive great change into the next decade. (1) Economic Competitiveness—the end of the Cold War in the early 1990's unleashed a global economy that is forecast to consume almost twice as much electricity in 2020 as it does today, providing new challenges and opportunities for U.S. energy technology exports and employment. (2) Climate Change—over the last 10 years, our confidence in the science of climate change has made greenhouse gas emissions an issue of concern for policymakers around the world, significantly changing our view of the role of energy efficiency and clean power in our nation's energy economy. Energy use as a whole generates most of the greenhouse gas emissions in the United States. (3) Clean Air—Energy and the environment are closely linked—the use of energy is the largest source of pollution in this country. Vehicles and power plants are the largest contributors to problems like ground-level ozone, acid rain, and particulates. In the past decade, we have seen increased regulatory support for urban and rural areas to mitigate their pollution problems by deploying energy efficiency and clean power technologies. (4) Electricity Industry Restructuring—The 1990s also saw significant change in electricity regulatory policies, with wholesale competition occurring across the country and about half of the states implementing retail competition, providing significant new market opportunities for clean energy technologies, as well as new challenges. Last year when I testified before this Subcommittee, only 14 states had adopted restructuring policies through legislation or regulation. Today, 24 states have enacted legislation and the other 26 states are debating the option.

And finally, Mr. Chairman, the most recent and fast-paced area of change is energy security. In 1999 we saw the price of crude oil rise from $10 per barrel in January to $26 in December and we saw the average U.S. gasoline price rise from $0.97 per gallon to $1.29. We saw home heating oil costs increase by 30 percent, residential natural gases increase by 19 percent, and residential propane costs increase by 12 percent. And this trend continues in 2000. In January 2000, five leading U.S. airlines imposed a $20 per flight fuel surcharge on tickets. In February, oil prices reached $30 per barrel and U. S. gasoline prices rose to $1.41 per gallon, the highest prices since the Gulf war. In late February, in response to high fuel prices, hundreds of truckers came to the Capitol to protest. Mr. Chairman, these impacts are real and are being felt by most sectors of society. The Energy Information Administration in its Annual Energy Outlook 2000, projects that our dependence on foreign oil will increase from 50 percent in 1999 to about 63 percent by 2015.

My point, Mr. Chairman, is that EERE programs can help mitigate energy price spikes and slow our rising dependence on foreign oil. For example, through our multi-agency integrated bioenergy initiative, and our DOE core research and development programs, we are working to bring down the costs of ethanol as a substitute for conventional transportation fuels. With sufficient funding, we expect a substantial market share for cellulosic ethanol—i.e., ethanol produced from a variety of agricultural and forestry residue and wastes over the next two decades.

And, Mr. Chairman, our energy security is not just about foreign oil. Last summer we were involved in a different type of energy security issue—the reliability of our electricity delivery system. In the summer of 1999, power outages occurred in New York City, New Jersey, and in the Southern and Central States. In Chicago, New England and the Mid-Atlantic region, power delivery disturbances were caused by high heat and humidity that strained the power distribution system. The Department of Energy's Power Outage Study Team, established by Secretary Richardson in August 1999, warned in their interim report "that while the electricity industry is undergoing fundamental change, the necessary operating practices, regulatory policies, and technological tools for dealing with those changes are not yet in place to assure an acceptable level of reliability. A significant increase in electricity use, especially during times of peak demand, is stressing the electric system."

Mr. Chairman, our programs are working to remedy the situation. One example is our distributed generation/grid reliability work. As our electricity industry restructures, we expect that fewer central generating power stations will be built. As much as 40 percent of new, smaller-scale generation will be located closer to its point of use and should encounter fewer siting difficulties. Our work will enhance the systems operations while maintaining grid reliability to ensure a constant electricity supply and to get the most optimal energy generation, delivery and use system obtainable.

STRATEGIC MANAGEMENT

In March, we released our strategic plan. In the rapidly changing world I have described, strategic planning is critical to ensure that EERE's research, development, demonstration and deployment portfolio is adequately addressing our nation's clean energy needs. In addition to strengthening EERE's traditional sector work, our strategic planning activities are leading to increased emphasis on a number of cross-cutting initiatives that allow us to leverage our resources across multiple markets. A further discussion of our corporate cross-cutting initiatives is presented later in my testimony.

Our strategic plan includes three overarching EERE goals which are: (1) to increase the supply and use of clean energy resources and the reliability of the energy system; (2) to increase the efficiency of the energy system; and (3) to continuously demonstrate EERE managerial and operational excellence.

In particular, we have set three quantitative goals dealing with renewable energy. They are to:

—Triple the non-hydroelectric renewable energy generating capacity to 25,000 megawatts of installed capacity by 2010 and maintain the viability of hydropower as an important energy resource.

—Triple U.S. use of bio-based products and bioenergy by 2010 from the 1999 level, which would create as much as $20 billion a year in new income for farmers and rural communities.

—Achieve 20 percent market penetration of distributed energy resources by 2010 to help optimize electricity generation and use.

Mr. Chairman, we have the strategies in place to achieve these goals. Most importantly, our R&D programs will provide the building blocks for a cleaner, more efficient and diverse energy economy in the twenty-first century. Decisions made now about energy production and use commit the nation to an energy path for future decades. To the extent that economically attractive, clean, and efficient technologies are chosen, both the economy and the environment benefit. Thus, a robust energy R&D program—the core of our work—is needed to enable the country to achieve a healthy and prosperous future.

However, as a complement to strong and focused R&D, we also need to undertake field verification projects. Many of the technologies that we develop with our partners are considered "high risk" investments. While progress in the laboratory is critical to the eventual deployment of advanced clean energy technologies, taking the technologies from the laboratory to a testing and evaluation setting helps build confidence in advanced energy technologies and practices. The data collected from these field verification activities also provide important information used by scientists and engineers in the R&D activities, which in turn, brings further advances to the technologies.

Further, Mr. Chairman, one of our key strategies is creating R&D partnerships among energy companies, energy-intensive industries, states, local governments, universities, and our national laboratories to advance the development of new energy technologies and practices. Such alliances help maximize the efficiency of the technology R&D process by leveraging public and private R&D resources, and bringing together interdisciplinary teams of scientists, engineers, and analysts to deliver technology results acceptable to energy markets. EERE works with its partners in both the planning and implementation phases of its R&D programs. In recent years, EERE has been making greater use of technology "visions" and "roadmaps" to develop shared goals among diverse groups within each sector and provide a framework for cooperative technology development efforts.

I am proud to report, Mr. Chairman, that our strategies are generating substantial success. For example, EERE-funded researchers have won 25 R&D 100 awards from 1996 to 1999. The R&D awards are judged each year by a panel of 75 respected scientists and are given by R&D Magazine for the most outstanding technology developments with significant commercial potential. Let me share just one example:

—*High Efficiency Photovoltaic (PV) Modules*.—This technology converts sunlight into electricity using copper indium diselenide based solar cells. Tests have demonstrated efficiencies of more than 12 percent, by far the highest of any commercial thin film module. Thin film PV modules have the potential of greatly reducing the cost of solar electricity and providing a wide range of new products with mass appeal. (Siemens Solar Industries and National Renewable Energy Laboratory).

Mr. Chairman, in addition to our R&D and field verification strategies, we have other strategies to advance clean energy technologies and practices. The market of energy users is broad and diverse, including hundreds of millions of residential,

commercial, and transportation users, hundreds of thousands of industrial users, and millions of users in the power sector. To enable deployment of advanced energy technologies and practices, we work with the leadership of high leverage public and private organizations that can influence energy decisions. In addition, we work with the banking, insurance, and bonding industries that determine where and how much capital is invested in the energy economy to look for opportunities to partner on initiatives that advance our mutual interests.

Finally, Mr. Chairman, when I testified last year, I informed you of my efforts to improve the management of my office—the third overarching goal of our EERE Strategic Plan. I want to report that I have continued to make management reform a major priority and I believe that we are achieving significant results. For example, the proportion of EERE Discretionary Financial Assistance (DFA) funding awarded on a competitive basis increased from 24 percent of funding in fiscal year 1996 to 88 percent in fiscal year 1999.

EERE Obligations for New Discretionary Financial Assistance Awarded on Competitive Basis

[In percent]

Fiscal year:	
1996	24.4
1997	33.3
1998	56.7
1997	88.2

Source: DOE Office of Procurement Policy and Procurement and Assistance Data System Percents do not include Congressional earmarks. If Congressional earmarks are included for fiscal year 1999, competitive percent increases to 93 percent.

In fiscal year 1999, I also established a Chief Operating Officer and new EERE Office of Planning, Budget, and Management to oversee all corporate EERE planning, budget, and management activities. And, Mr. Chairman, while I am pleased with our results so far, I am committed to further improvements. Under the leadership of this new office, a key approach is the creation of a Strategic Management System. Based on the complexity of our Nation's energy markets, the range of energy technology options that could be pursued, and the need to invest federal resources wisely, it is essential that the EERE programs be carried out with superior corporate management and business acumen. As you know and can appreciate, Mr. Chairman, the government cycles often involve the management of up to four budget years at any time. To do this in the most effective manner, an orderly, systematic approach is needed to the business of planning, budget formulation, budget execution and program analysis and evaluation. Mr. Chairman, for these reasons, I instituted our Strategic Management System.

As I stated in my testimony last year, I welcome external reviews to assist us in identifying areas for further management improvements. The National Academy of Public Administration has undertaken one of these efforts and I expect their report to be released later this month.

Similarly, the National Academy of Sciences has been reviewing our renewable R&D portfolio and we are awaiting their draft report late this month.

While the actions and initiatives that I have described have resulted in significant management improvements, implementing and sustaining these improvements are dependent upon staffing levels and employee competencies. The modest increase that we are requesting in program direction is focused on the staffing levels and employee competencies that will support these management improvements.

We acknowledge the EERE management issues raised by this Subcommittee that led to one-year funding limitations several years ago. We have diligently worked to address these concerns and to implement management systems that will prevent their reoccurrence in the future. It is my belief, Mr. Chairman, that one-year funds have limited the flexibility of the programs. I would therefore like to work with you and this Subcommittee on the restoration of no-year funds.

RECENT R&D SUCCESS

In my testimony before this Subcommittee last year, I spoke to you about the tremendous strides we made in reducing the cost of electricity from our nation's vast renewable energy resources, which is down 80 percent since 1980.

Today, I am pleased to announce that since last year we have achieved further successes that will help increase the supply and use of clean energy resources and the reliability of the energy system. Let me take a moment to highlight a few examples of these accomplishments:

—In photovoltaics, research supported by the program has achieved two world solar cell efficiency records: (1) a 32 percent efficient gallium arsenide-based concentrator cell was produced under a project led by the National Renewable Energy Laboratory; and (2) a Thin Film Partnership project has produced a 12 percent efficient thin film photovoltaic module, using copper indium diselenide material, that is now commercially available.

—Nearly 1000 MW of wind power generation capacity was installed in the U.S. in just the last 18 months—enough electricity for about 400,000 U.S. homes—bringing the total installed capacity in the United States to about 2500 MW. More than 400 MW was installed in the Upper Midwest alone, including a 107 MW facility at Lake Benton, MN, which is producing unsubsidized power at $0.04 per kWh. Additionally, Northern States Power recently announced that two proposed wind energy facilities are among six projects—including natural gas-fired generation and hydropower—that have been selected for contract negotiations in its competition for 1200 MW of new generation from all sources. This marks the first time that wind energy has been able to compete with conventional baseload, cycling and peaking technologies for new power generation.

—As the world leader in high temperature superconductivity technology R&D, the U.S. program research focuses on developing advanced materials and technologies that will significantly enhance electric grid system reliability, reduce transmission losses, and substantially increase the efficiency in end-use applications such as large industrial motors. Recent research breakthroughs at Oak Ridge National Laboratory set the stage for the initiation of grid-connected field tests of high temperature superconductivity technology in Detroit, Michigan, Chicago, Illinois and Carrollton, Georgia in fiscal year 2001. Laboratory, industry, and DOE partnerships will continue to advance the development of thin, lightweight superconducting "tapes" that will be able to carry up to 100 times the capacity as much heavier copper wires—with essentially no energy losses.

—The Energy Storage program, which is focused on addressing the growing number of grid reliability and power quality issues facing the U.S. and is helping to resolve intermittency issues faced by some renewable technologies, achieved a very notable success this past year. At S&C Electric—Chicago's largest manufacturing plant—a truck-sized 2 MW battery was installed to protect the facility's extrusion machinery which molds high voltage insulators. Such processes are particularly vulnerable to short power outages because the entire run must be discarded and equipment may be severely damaged. This new system ensures that power will continue to be supplied seamlessly whenever an outage or voltage sag happens. The system has been estimated to prevent production losses of approximately $500,000 annually—representing a one-year payback period. Similar systems can be developed to help protect other vulnerable industries such as semiconductor and pharmaceutical plants.

CONTINUING R&D CHALLENGES

While we continue to make tremendous strides in these and other renewable and power delivery technologies, we still have much work to do. Competition in the power generation sector has led to significant decreases in the price of power from new sources of generation. In particular, natural gas-fired combustion turbine technology, which produces power at $0.03 per kWh or less, has set a new threshold for market penetration of new generation technologies in most locations here in the U.S. Strong efforts in core technology R&D, coupled with research on integrating renewable and renewable/hybrid systems, will help accelerate cost reductions and make these systems more attractive both domestically and overseas. As U.S. technologies continue to pursue the global market, where the need for energy far outstrips supply and electricity costs are typically much higher, sales will spur improved economies of scale in production and help lower costs.

However, both self interest and the great economic potential in this international energy marketplace has also encouraged other nations to aggressively pursue their own renewable energy technology research, development, and deployment programs—oftentimes funded at much higher levels than our U.S. programs. For example, for several years now we have cautioned that Japan's very aggressive RD&D program threatened U.S. technology and sales leadership in the area of photovoltaics, which the U.S. regained in 1993. While U.S. companies still increased their overall sales volume in 1999, Japan's four to five-fold higher funding levels and favorable domestic policies have enabled them to recapture world sales leadership with 40 percent of the world market compared to 31 percent for the U.S. (In 1998, the U.S. held a slim lead—35 percent to 32 percent—over Japan.)

How can we meet these challenges to our technology leadership? Increased and sustained levels of federal funding is part of the answer. Fluctuation in funding disrupts research efforts, can result in losses of key scientists, and delays achievement of goals. Better coordination among researchers in federal agencies, private sector organizations, and industry is another part of the answer.

Another is to update and improve key facilities at our national laboratories—the workhorses of our core R&D. For example, the National Renewable Energy Laboratory (NREL) is a global leader in renewable energy research, development, and field validation activities, and is home to the National Wind Technology Center and the National Photovoltaic Center. Upgrades in the highly specialized research instruments and the physical plant are needed annually to avoid critical failures and maintain world leadership. Unfortunately, NREL receives the least capital funding of DOE major research and development laboratories, and capital investment is well below the research and development industry average. Sustained capital reinvestment at NREL is essential to maintain American leadership in renewable energy research and development activities.

An additional way to meet the challenges to U.S. technology leadership is to reduce institutional, regulatory, and trade barriers to the sales of our technology overseas. As a successful example, we have now established performance and reliability standards, and a globally recognized certification process, so that American-produced wind energy technologies will be accepted in countries around the world.

Mr. Chairman, I am proud of our successes and I appreciate your support and the support of this Subcommittee for our activities. However, the promise of these programs is enormous and while we have made great progress, we continue to ask for your support to carry out our important mission.

FISCAL YEAR 2001 BUDGET REQUEST

The following tables provide details of our fiscal year 2001 budget request. The sections following the tables describe ongoing programs and our fiscal year 2001 budget request in the areas of Solar and Renewable technologies, the National Renewable Energy Laboratory (NREL), the Departmental Energy Management program, and program direction. Solar and Renewable Resource Technologies (in millions of dollars)

SOLAR AND RENEWABLE RESOURCE TECHNOLOGIES

[In millions of dollars]

	Fiscal year			
	1999	2000	2001 Request	2000–2001 Change
Power Technologies	269.1	252.4	330.0	+77.6
Solar Building Technology Research	3.5	2.0	4.5	+2.5
Photovoltaic Energy Systems	70.6	65.9	82.0	+16.1
Concentrating Solar Power	16.8	15.2	15.0	−0.2
Biomass/Biofuels Energy Systems—Power Systems	30.8	31.8	48.0	+16.2
Wind Energy Systems	34.1	32.5	50.5	+18.0
Renewable Energy Production Incentive	4.0	1.5	4.0	+2.5
Solar Program Support [1]	.....	4.9	6.5	+1.6
International Renewable Energy Program [1]	6.3	3.8	11.5	+7.7
Geothermal Energy Systems	28.2	23.6	27.0	+3.4
Hydrogen Research	22.0	24.6	23.0	−1.6
Hydropower Development	3.2	4.9	5.0	+0.1
Renewable Indian Energy Resources	4.8	3.9	5.0	+1.1
Electric Energy Systems and Storage	40.8	37.8	48.0	+10.2
Federal Buildings/Remote Power Init	4.0	.....	.....	.....
Transportation Technologies: Biomass/Biofuels Energy Systems—Transportation	41.2	38.9	54.4	+15.5
National Renewable Energy Laboratory	3.9	1.1	1.9	+0.8
Program Direction	18.1	17.7	18.2	+0.5

SOLAR AND RENEWABLE RESOURCE TECHNOLOGIES—Continued

[In millions of dollars]

	Fiscal year			
	1999	2000	2001 Request	2000–2001 Change
Departmental Energy Management Program	.....	.....	5.0	+5.0
Subtotal, Solar and Renewable Energy	332.3	310.1	409.5	+99.4
Use of Prior Year Balances	1.0	0.8	.....	−0.8
Total, Solar and Renewable Energy	331.3	309.3	409.5	+100.2

[1] Excludes funding for international energy efficiency programs under Energy Conservation.

Our fiscal year 2001 program level for Solar and Renewable Energy Technologies is $409.5 million—an increase of $99.4 million (or 32 percent) over fiscal year 2000. The bulk of the EERE Energy and Water Development Appropriation supports the work of the Office of Power Technologies (OPT) at $334.6 million. OPT works with electric service providers and related industries to advance clean, competitive and reliable power technologies. It develops renewable energy technologies that use solar, wind, hydropower, geothermal and biomass energy resources and conduct R&D that will enable a hydrogen energy infrastructure in the future. Our programs also develop advanced technologies—including high temperature superconducting materials, real-time power system controls, and energy storage—that will improve the energy efficiency and cost-effectiveness of the nation's electric systems. Finally, the office facilitates the export of renewable energy power generation internationally.

Included in the Energy and Water Development Appropriation is $54.4 million for the Office of Transportation Technologies (OTT) to support R&D on production of biomass-based transportation fuels. The requested funds also include: $18.2 million for Program Direction, which provides the federal staffing resources and associated funding to support the management and oversight of the Solar and Renewable programs; $1.9 million for the National Energy Renewable Laboratory (NREL); and $5 million for the Department Energy Management Program (DEMP), to manage both the utility demand and supply functions at DOE sites.

Included in our fiscal year 2001 request are several new and ongoing initiatives. Let me begin by discussing two initiatives that involve several EERE programs, the Bioenergy and Bioproducts Initiative and the International Clean Energy Initiative. I will also briefly discuss consolidation of our distributed generation activities and, finally, I will discuss our ongoing programs and the specific budget requests for those programs.

BIOENERGY AND BIOBASED PRODUCTS INITIATIVE

Recent scientific advances in bioenergy and biobased products have created enormous potential to: enhance U.S. energy security; help manage carbon emissions; protect the environment; and develop new economic opportunities for rural America. This nation has abundant biomass resources (crops, trees, agricultural wastes). These resources have the potential to provide substantial amounts of power, fuels, chemicals and other biobased products. Today they already provide about 3 percent of U.S. energy. This initiative can capitalize on the many separate but related activities across the government, industry, and academia by coordinating the planning projects designed to accelerate the use of bioenergy.

In the past year, industry executives from the pulp and paper, agricultural commodity, major chemicals, and the fuel ethanol and biomass power utility industries, met in St. Louis and Washington, DC to develop a bioenergy vision for the industry and nation. "The Bioenergy Vision: Achieving Integrated Development and Use of Our Nation's Biologically Derived Renewable Resources" challenges industry and government alike to develop a sustainable energy future founded on domestic, renewable biomass. The vision document is currently being reviewed and will be published soon, but the message is clear, we can work in partnership towards a common goal with substantial national benefits.

On August 12, 1999, the President issued an Executive Order on Biobased Products and Bioenergy that will coordinate federal efforts to accelerate the development

of 21st century biobased industries that use trees, crops, agricultural, forest, and aquatic resources to make an array of commercial products including fuels, electricity and chemicals. The President set a goal of tripling U.S. use of biobased products and bioenergy by 2010. In the President's remarks at the Executive Order signing ceremony, he stated that reaching the tripling goal "would generate as much as $20 billion a year in new income for farmers and rural communities, while reducing greenhouse gas emissions by as much as 100 million tons a year—the equivalent of taking more than 70 million cars off the road."

The Executive Order has been complemented by the introduction of several bills in Congress. Senator Richard Lugar (R-IN) introduced the National Sustainable Fuels and Chemicals Act of 1999, which was adopted by the full Senate on February 29, 2000. This is a research and development bill designed to overcome technical barriers to low-cost biomass conversion by encouraging closer coordination and integration among federal agencies, national labs, universities, private sector companies, and environmental organizations. Companion biomass bills were introduced by Representatives Ewing (R-IL) and Udall (D-CO). The Congressional and White House support demonstrates the growing importance of investing in the development of biobased products and bioenergy industries today, which will help the country prosper in this new century.

Through a newly-formed Interagency Council, the Administration is currently in the process of surveying all of the programs that have a direct role in meeting the goals of this initiative. This includes programs at DOE, USDA, NSF, DOC, and DOI. This survey will lead to the development of a strategic plan that will help us adjust our portfolio in coming years to concentrate efforts on the most promising technologies to realize our goals. At this point, we have already begun to respond to input and think more wholistically about the technologies. The fiscal year 2001 request directs new funds toward priority areas. Of particular importance are R&D activities designed to advance the development of "biorefineries"—facilities that can process biomass into an array of fuels and products much like oil refineries do today. We are also beginning to focus more on intermediate chemicals such as sugars that can be used as platform chemicals, to be used to produce many different end products.

To support the Bioenergy initiative, the Administration proposes an increase of more than $93 million over the amounts available for fiscal year 2000, with $49 million of this increase for programs managed by DOE and $44 million for enhanced efforts at USDA. For fiscal year 2001, efforts will follow the new strategic plan that will be developed under the Executive Order and roadmaps identified under the Bioenergy and Bioproducts Initiative. It is anticipated that new partnerships will come together for the first time in an integrated fashion, across the several sectors of the currently fragmented bioenergy and bioproducts industry, leading to new business opportunities. We are already funding in fiscal year 2000, per Energy and Water Development direction, new R&D that cuts across the biopower, biofuels and bioproducts sectors. New and broader innovative approaches will be encouraged through a multi-agency, industry peer review project selection process in fiscal year 2001. Below is a brief description of the two of the four base programs in EERE that directly or indirectly support the work of the initiative. The four programs are Biopower Technologies, Biofuels Technologies, Forestry and Paper Products and Agriculture: the Biopower and Biofuels programs are funded by this subcommittee; the Forest and Paper Products and the Agriculture programs are funded in the appropriation for the Interior and Related Agencies.

Biopower Technologies—The budget request for the Biopower program within the Office of Power Technologies (OPT) is $48 million in fiscal year 2001. The mission of Biopower Technology is to integrate sustainable biomass feedstock production with efficient biomass power generation systems that can provide substantial energy, economic, and environmental benefits. Collaborative partnerships between OPT and the private sector will focus on critical research, development, and cost-shared technology verification activities. Biopower Technologies will include a full complement of efficient biomass technologies, size ranges, and feedstocks (agricultural residues, wood residues, energy crops, etc.). The program's goal is the establishment of 3,000 MW of new renewable biomass power generation capacity installed by 2010. The request includes $5.0 million for thermochemical conversion and $26.4 million for systems development. Also included are $4.0 million for feedstock development; $1.6 million for the regional biomass energy program; and $11.0 million in support of integrated projects under this initiative.

This request will support an expanded research effort that will aid in defining chemical characteristics of biomass under various forms of thermochemical conversion (e.g. gasification, combustion, etc.). Efforts will include laboratory modeling and process simulation which will reduce technical risks and development costs of

biopower technologies. These efforts should also result in shorter development time during field validations. The Biopower Technologies will also examine methods to increase the net energy output of biopower systems per unit of carbon used through high efficiency power and thermal recovery. The systems development activity request is $9.4 million for the co-firing biomass with coal effort, $5.5 million for the small modular biopower systems, $4.0 million for biomass power for rural development, $4.0 million for the Vermont gasifier project, $2.0 million for the international clean energy initiative to develop grid-systems and off-grid/mini-systems with biomass and other renewables, and $1.5 million is requested for a new agriculture residues to energy program.

Biofuels Technologies.—Biofuels technologies managed by the Office of Transportation Technologies (OTT) has a budget request of $54.4 million in fiscal year 2001. This RD&D effort will lead to cost competitive technologies for the production of renewable transportation fuels, in collaboration and partnership with industry, other government organizations, and academic institutions. In support of this mission, the program pursues the development of low-cost biomass feedstocks and cost competitive conversion technologies for liquid fuels production from agricultural residues, forestry wastes, and energy crops. The development and deployment of biofuels technologies can displace a substantial amount of imported petroleum while promoting rural economic development. Since biofuels produce almost no net carbon on a lifecycle basis, they are a very promising supply side option for reducing carbon emissions in the transportation sector. The Biofuels technologies request of $54.4 million includes: $38.4 million for ethanol production; $1.0 million for renewable diesel fuel alternatives; $4.5 million for feedstock development; $3.5 million for the regional biomass energy program; and $7.0 million in support of integrated activities under the initiative.

INTERNATIONAL CLEAN ENERGY INITIATIVE

While Japan, Germany, the Netherlands, Denmark and others forge ahead with international energy technology sales opportunities, the U.S. is losing its leadership role. U.S. firms are losing a significant share of the multi-hundred-billion dollar per year global market in energy supply technologies, most of which is and remains overseas. About 2–3 billion people lack access to a reliable supply of electricity. The International Clean Energy Initiative (ICEI) initiative will strengthen America's capacity for energy technology innovation and advance clean energy technology applications in large foreign markets.

Its purpose is to help developing countries and countries with economies in transition to "leap frog" conventional approaches to energy production and instead make the best use of clean energy technologies. We will focus on providing technical assistance to countries and regions to develop their capacity to conduct sector-specific economic analyses of technologies and policies. ICEI will provide technical assistance to undertake project assessments, to identify the unique mix of clean energy technologies (e.g., wind, hydro, PV, biomass, solar thermal and natural gas) and to develop strategies that fit the country's climates, resources, and local needs. It will also provide in-country analysis of models that could be used to identify cost effective energy efficiency and fuel switching opportunities. ICEI will also help attract U.S. public and private financing sources to develop projects as well as create long-term relationships between U.S. public and private laboratories and organizations and those in developing and transition countries.

DISTRIBUTED ENERGY RESOURCES (DER)

Mr. Chairman, I also have begun to consolidate all distributed energy resources activities within the EERE portfolio from three distinct sectors into one Distributed Energy Resources program. The DER program will accelerate the development and deployment of cleaner and more efficient, affordable, and reliable distributed energy resources which include renewable, natural gas, enabling and power delivery technologies. We will create a plan for realizing the potentially large public benefits (e.g., 30–40 percent of new electric generation and use equating to over $5 trillion in annual sales), both domestically and internationally.

MILLION SOLAR ROOFS INITIATIVE

In fiscal year 2001, we are requesting $3.0 million (up $1.5 million) to facilitate and expand deployment of solar energy systems throughout the U.S. through training and outreach programs with state and local partnerships. The initiative works with partners in the building industry, local governments, state agencies, the solar industry, electric service providers, and non-governmental organizations to remove market barriers and strengthen grassroots demand for photovoltaic and solar ther-

mal technologies. We work with nearly 50 State and local partnerships that provide training and technical assistance to builders, solar equipment installers, utilities and financial institutions in order to develop the technology and support infrastructure to create sustainable solar energy markets.

THE FISCAL YEAR 2001 BUDGET REQUEST

Mr. Chairman, at this point, I will discuss our fiscal year 2001 budget request, in the order of the budget submission. The proposed increase will support research, development and field validation activities in solar building technologies, photovoltaic energy systems, concentrating solar power technologies, biopower and biofuels systems, wind energy systems, international renewable energy, renewable energy production incentives, solar program support, the National Renewable Energy Laboratory (NREL), geothermal, hydrogen, and hydropower technologies, renewable Indian energy resources, and electric energy systems and storage. Additionally, I will address the Departmental Energy Management Program, and Solar program direction; activities which cut across several EERE sectors.

SOLAR ENERGY PROGRAMS

Our Solar Energy programs request is $101.5 million. The request covers solar building technologies, photovoltaics systems and concentrating solar power technologies. These three items follow and will be discussed individually in the order that they appear in the budget.

Solar Building Technologies

Imagine "zero energy, zero emission" buildings that not only economically provide all their own energy, but also provide a comfortable environment in which to live or work and insure against power outages. To achieve this new goal, Solar Buildings Technologies is requesting $4.5 million—an increase of $2.53 million to conduct R&D to optimally combine solar energy technologies with energy efficient appliances and advanced construction techniques. Three areas of effort will be pursued in fiscal year 2001, including: the development of new polymer (plastic) solar collectors that provide inexpensive energy for water heating; research on a new technology that collects sunlight and distributes it into the interior rooms of a building through fiber optics; and coordination of complementary R&D activities.

OPT requests $2.8 million for solar thermal R&D to develop a new generation of solar water heaters that is 50 percent less expensive than today's technology (from $0.08/kWh to $0.04/kWh delivered energy cost). This advanced lightweight system would replace heavier, more expensive copper tubing and glass systems and would enable a family to buy a solar water heater for about $1,000, with energy savings returning their investment within four years. Cost reduction will be realized through the development of industry concepts that use inexpensive polymers, improved manufacturing processes, and innovative design. Prototype systems will be built and tested during fiscal year 2001.

Solar building technologies will also determine the feasibility of using solar concentrating technologies (e.g. small scale parabolic dishes) with large-core optical fibers to bring sunlight into the interior of buildings. In addition, a proof of concept model will be built. Activities will be coordinated with DOE's Office of Building Technology, State and Community Programs (BTS) since this light source would have to be integrated with a building's conventional lighting system. This "hybrid" system uses the visible portion of the solar spectrum in its natural form (light) and supplements it with electric light when necessary. In fiscal year 2001, $0.7 is requested for this effort.

Technology coordination will assess the optimum mix of solar technologies to provide all the energy needed by efficient buildings in representative U.S. climates. This assessment also will be coordinated with BTS. Two competitive solicitations will be issued to: (1) explore the potential of integrating solar technology with fossil fuel based heating systems (e.g. heat pumps and radiant heating); and (2) develop conceptual designs of zero energy buildings.

Photovoltaic Energy Systems

The strategic goal of Photovoltaic Energy Systems is to make photovoltaic (PV) technologies a significant part of the U.S. domestic economy, both as an energy source and a technology export industry. In order to achieve this goal, Photovoltaic Energy Systems has identified certain key milestones for each of the PV technologies that address conversion efficiency, cost, and reliability. For example, the Photovoltaic Energy System expects to set performance records in all leading PV technologies (i.e., thin film and crystalline silicon) by 2004 and reduce the direct manufacturing cost of PV modules by 40 percent from the current average cost of

$2.50/watt to $1.50/watt (equivalent to 15 cents/kWh in an installed system). The Photovoltaic Energy System also intends to ensure that PV modules have a service lifetime greater than 25 years by improving reliability and reducing recurring costs.

There are three main elements to the Photovoltaic Energy Systems mission and the fiscal year 2001 request—Fundamental Research ($20.3 million), Advanced Materials and Devices ($27.0 million), and Technology Development ($34.7 million). The major fiscal year 2001 program activities that will be carried out in each category are addressed below.

Fundamental research

Fundamental research involves three component programs: measurement and characterization; basic research/university programs; and high performance advanced research for which we are requesting $20.3 million (up $6.1 million). The first component measures and characterizes PV cell materials and devices, in part to identify and reduce defects, using state-of-the-art equipment. Through the National Renewable Energy Laboratory (NREL), Photovoltaic Energy Systems has access to more than 40 techniques to measure electrical and optical properties of PV cells, as well as their chemistry, structure, and physical nature.

Under the basic research/university programs, the Photovoltaic Energy System supports research to understand cell structures and properties of the four primary materials (i.e., amorphous silicon, cadmium telluride, copper indium diselenide, and thin silicon materials) used in thin film technologies. This component also looks at advanced and innovative materials and deposition methodologies, and works with universities to conduct cutting-edge research and explore innovative new ideas. In fiscal year 2000, we will issue a new solicitation for breakthrough, non-conventional PV technologies, such as liquid cells, polymers, and biochemical processes aimed at dramatic cost reductions. Continuation of both of these basic research activities are crucial to the program's efforts to develop the advanced technologies needed to meet the long-term goal of $0.06/kWhr electricity.

The third component is high performance advanced research. This research activity, started in fiscal year 2000, is aimed at substantially increasing efficiency of two key photovoltaic technologies: large area, monolithically interconnected thin films; and (multi-junction III–V-based) concentrator cells. Fundamental innovations are required to essentially double the conversion efficiency of thin films from their current 8–10 percent to 15–20 percent, and to increase multi-junction cell efficiency from 30 percent to 40 percent under 500X concentration. Successful development of a 40 percent efficient, four-junction cell will enable the development of a 33 percent efficient complete PV module. Both the enhanced thin film and the multi-junction III–V approaches should yield dramatic cost reductions.

Advanced materials and devices

The advanced materials and devices request of $27.0 million (no change) will support the specific research areas such as the thin film partnership and the crystalline silicon/high efficiency devices programs. The thin film partnership is a government/industry/university partnership to accelerate development of cost-effective, thin film technologies using the four primary materials discussed above. Thin film technologies are considered the best option for meeting the mid- and long-term cost goals. Some accomplishments of the thin film partnership are a new world record at NREL for an 18.8 percent efficient copper indium diselenide (CIS) cell, and a new world record and prestigious R&D 100 Award by Siemens Solar Industries for the highest module efficiency (12.1 percent) using CIS technology.

Research on crystalline silicon/high efficiency devices investigates the role of impurities and defects in crystalline silicon technologies and seeks to develop new processes and device structures to increase performance. Core research on high efficiency III–V gallium arsenide (GaAs) materials and devices for concentrator and flat plate applications will also be continued in fiscal year 2001.

Technology development

The last major category, technology development, contains research activities in photovoltaic manufacturing R&D, systems engineering and reliability, PV building integrated opportunities, and partnerships for technology introduction, to support our request of $34.7 million (up $10.0 million from the fiscal year 2000 appropriation).

Photovoltaic manufacturing R&D improves the manufacturing processes for thin film technologies and assists industry in developing advanced techniques for manufacturing higher performance and lower cost commercial products. Work is conducted through the photovoltaic manufacturing technology (PVMaT) project. PVMaT is designed to help the U.S. industry improve manufacturing processes, accelerate manufacturing cost reductions for PV modules, improve commercial product per-

formance, and lay the groundwork for a substantial scale-up of U.S.-based PV manufacturing plant capacities. In fiscal year 2001, a new competitive solicitation will be issued for new in-line process diagnostics and state-of-the-art measurement and characterization equipment needed for module scale-up and successful manufacturing. These advanced manufacturing and processing techniques are key to achieving further cost reductions.

The systems engineering and reliability research is essential to achieving the Photovoltaic Energy Systems goal of developing modules and systems that can last 30 years in the field. Cost competitiveness for PV generated electricity is directly dependent on payback over the life of the system under actual operating conditions. The fiscal year 2001 program will continue to collaborate with industry to improve systems and balance of system reliability to reduce life-cycle cost by providing technical assistance, field engineering, accelerated durability testing, and system outdoor testing and evaluation. Specific to module reliability, this activity works to understand the photo/thermal/chemical/environmental factors that influence the stability of encapsulated materials and performance of cells in modules. This activity also supports development of domestic and international standards and codes, and procedures for certifying performance of commercial systems.

The PV building integrated opportunities activity is a highly cost-shared R&D effort with industry to develop building integrated PV products. The PV industry's market projections show substantial growth opportunities in the next five years for building integrated PV products and systems, and this R&D responds to their need for continued development. The activities planned in fiscal year 2001 are to continue conducting R&D on advanced PV building products, concepts, tools, and modeling procedures in support of industry's development efforts. Technical and institutional barriers that inhibit market growth for PV in the buildings sector will also be addressed.

The partnership for technology introduction is a collaboration between the U.S. utility industry and DOE to increase and accelerate electric utility use of grid-connected and grid-independent photovoltaics for the benefit of the utilities and their customers. This will also be continued in fiscal year 2001. Through the utility photovoltaic group's (UPVG) TEAM–UP program, a new competitive Partnership for Technology Introduction solicitation will be issued for highly leveraged projects emphasizing building integrated applications, including school buildings.

Concentrating Solar Power Technologies

The Concentrating Solar Power Technologies program works in collaboration with U.S. industry to develop solar technologies that can provide clean power, when it is needed, at prices competitive with current sources of peaking energy supply. With a fiscal year 2001 funding request of $15.0 million, Concentrating Solar Power Technologies will focus its efforts on two five-year objectives: (1) developing highly reliable, kilowatt-sized power systems for distributed and stand-alone applications (including residential use); and (2) reducing the cost of fully dispatchable systems (from 10–12 cents/kWh to 6–8 cents/kWh) capable of producing power on demand. Achieving both of these targets will provide both U.S. industry and U.S. citizens with green energy options that will create a broad range of jobs domestically, while contributing substantially to the world's need for cleaner power production alternatives.

Ranging in size from several kilowatts (dish/engine systems) to multi-megawatt installations (parabolic troughs and power towers), Concentrating Solar Power Technologies are expected to satisfy substantial domestic and international energy needs, contributing over 5,000 MW of power by 2010, and reducing greenhouse gas emissions. Energy from CSP systems is high-value renewable power because energy storage and hybrid designs allow it to be provided on-demand—even when the sun is not shining. This dispatchable feature is an added-value for CSP technologies that greatly enhances their acceptance by users. CSP Program efforts are in three areas: Distributed Power Systems Development ($4.3 million); Dispatchable Power System Development ($5.2 million) and Advanced Components and Systems ($5.5 million).

Distributed Power System Development

Distributed Power System Development—$4.3M (down $0.8M from the fiscal year 2000 appropriation). The CSP Program is currently cost-sharing the development and testing of two "larger-scale" (25kW) dish/engine designs for grid-connected applications. One industry team installed their first three units in 1999. These systems are currently undergoing reliability testing at utility sites in Arizona. A second industry team, with an alternate design, will operate and test several first-generation units in California while making component modifications and installing an advanced system in early 2001. Having two dish/engine technology teams strengthens

the position of U.S. industry in their efforts to develop commercially viable products. Within the next three years, 25kW dish/engine systems will be providing power for an increasingly well defined market.

Dish/engine technology is well suited to serve remote power needs where grid-connected power is not available. With initial system checkout completed in 1999 and off-grid capability achieved in 2000, the Concentrating Solar Power Technologies will complete the field installation and initiate testing of two second-generation 10kW dish/engine units on Native American lands in Arizona and New Mexico in 2001. This project will provide Native Americans with access to power where there is none, and create job opportunities through system manufacture, installation, operation, and maintenance. In addition, comprehensive studies have recently shown that residential markets in the Sunbelt offer opportunities for "smaller-scale" (1–5kW) CSP systems. To initiate R&D in this area, competitive solicitations were issued in fiscal year 2000 to both universities and private industry to explore alternative solar dish-based system concepts. Prototype design efforts will begin in fiscal year 2001.

Dispatchable Power System Development

Dispatchable Power System Development—$5.2M (down $0.8M from the fiscal year 2000 appropriation). Concentrating Solar Power Technologies launched the USA Trough Initiative in fiscal year 1999 in order to work with a resurgent U.S. industry and achieve the first solar electric power for under 10 cents/kWh. Fiscal year 2001 activities include the development of innovative trough concepts and R&D on advanced trough components. CSPT is also working through U.S. industry with the current manufacturers of trough components to improve the reliability of receiver tubes and increase the performance of the solar collector. State-of-the-art components are being tested at California's working trough plants in fiscal year 2000, with new component designs expected in fiscal year 2001. Based on their low cost and ease of hybridization with fossil fuel, solar troughs are currently the leading candidate for MW-scale solar power projects, both domestically and internationally. Further, analysis by the World Bank suggests economical storage will greatly enhance the value of trough technology, especially in markets where solar-only dispatchable power is required. Accordingly, Concentrating Solar Power Technologies with U.S. industry to investigate both near-term and long-term storage options for trough plants.

Recent events such as the "royal decree" in Spain (where the government is offering up to a 24 cents/kWh incentive for solar-only, dispatchable power), and the World Bank/Global Environment Facility approval of $200 million to support the installation of Concentrating Solar Power Technologies projects in four countries, have stimulated U.S. industry into forming strategic partnerships to capitalize on these near-term project opportunities. OPT will provide technical assistance to U.S. industry in all three technologies (troughs, towers, and dishes) to ensure the U.S. maintains a leadership role, in the form of jobs and manufacturing, as trough plants begin to enter world markets within the next three years.

Advanced Components and Systems

Advanced Components and Systems—$5.5M (up $1.4M from the fiscal year 2000 appropriated level). Advanced research on high-efficiency system designs and new component materials will produce the long-term technical advances required for Concentrating Solar Power Technologies to successfully compete in large-scale dispatchable and distributed power markets. Several broad-based competitive solicitations were issued to both universities and industry in fiscal year 2000 to diversify and strengthen the research base for the development of CSP technologies. Advances resulting from this work will enhance the technical and economic competitiveness of Concentrating Solar Power Technologies. This advanced research will provide the breakthroughs needed to achieve the long-term program goal of developing CSP technology capable of providing electric power in the 4-to-6 cents/kWh range. Balanced RD&D with laboratories, universities and industry working together will be employed.

Biopower/Biofuels

We are requesting $48.0 million for Biopower programs in fiscal year 2001, an increase of $16.2 million. The program supports biomass energy projects aimed at principal markets of electric power and transportation. For biofuels transportation programs we are requesting $54.4 million. This RD&D effort will lead to cost competitive technologies for the production of renewable transportation fuels, in collaboration and partnership with industry, other government organizations, and academic institutions. Biopower and Biofuels are two of the core programs that partici-

pate in the Bioenergy and Biobased Products Initiative as previously discussed in my testimony.

Wind Energy Systems

The fiscal year 2001 funding request for the Wind Energy Systems program is $50.5 million, an increase of $18.0 million over the fiscal year 2000 appropriation. This increase reflects our belief that wind energy technology offers an important opportunity for America to gain important and substantial economic, environmental, and energy security benefits. While wind energy growth has been rapid and consistent on a worldwide basis during recent years, its growth in the U.S. remains highly uncertain as electric power markets deregulate and place increased emphasis on low cost of energy production. The key to positioning wind as an important clean energy technology for U.S. industry and competitive power markets, as well as export markets, is the innovative, world-class research being carried out under the Wind Energy Systems program. An essential near-term focus of these efforts are the program's partnerships with industry to develop wind turbines capable of producing energy as low as 2.5 cents per kWh at sites with good winds. This will help substantially in leveling the playing field in competition for new energy supply in the U.S. For wind to realize its full potential for America, Wind Energy Systems is continuing emphasis on completing the R&D that will further reduce costs, and thereby expand the range of wind resources that can be economically harnessed.

In fiscal year 2001, we will begin implementation of WindPowering America, an aggressive activity with the goal of installing power generation facilities that will produce 5 percent of America's electricity by 2020. Next Generation Turbine research and development activities will accelerate to help achieve the market-driven 2002 goal of 2.5 cents per kWh on good sites.

In fiscal year 2001, the Wind Energy Systems program will focus on applied research ($15.0 million), turbine research ($14.5 million), and cooperative research and testing ($21.0 million).

Applied Research

Applied Research (up $1.5 million from the fiscal year 2000 appropriation) addresses fundamental engineering and technology issues with a broad range of applications, and is carried out at the national laboratories and numerous universities. Advancements to computer aided models for wind turbine design will be completed using key data obtained from full-scale turbine wind tunnel testing completed in 2000. The requested increase will accelerate the wind partnerships for advanced component technologies (WindPACT) project. The WindPACT project has identified promising wind turbine component and subsystem concepts for further development and testing. In 2001, industry partners will be competitively selected to fabricate and test these innovative component technologies in close collaboration with laboratory researchers. After performance and viability are proven through laboratory and field testing, the program will work with industry to incorporate WindPACT component technologies into leading-edge wind turbines for commercial markets.

Turbine Research

Turbine Research (up $2.0 million from the fiscal year 2000 appropriation) is a cost-shared cooperative program with industry and utilities that supports competitively-selected research, testing, and field verification needed for advanced technology wind turbines. The requested increase for turbine research will support continuing partnerships with five U.S. companies located in California, Oklahoma, Vermont, and Washington. Two companies are designing turbines under the next generation turbine project, which is targeted to lead to wind turbines in operation by 2002 that are capable of achieving a cost of 2½ cents/kWh at 15 mph wind sites by 2002. In fiscal year 2001, these companies will be completing fabrication, installation, and beginning field testing of their engineering and manufacturing development prototype turbines. Field tests of two prototype turbines under the small wind turbine project will be completed, and efforts will begin to obtain field verification experience with the manufacturers early production units. The program will also carry out R&D and field verification on the cold weather wind turbine, with prototypes in operation at the National Wind Technology Center and in Alaska. The advance turbine concepts project will be launched in fiscal year 2001, which will allow U.S. industry to explore the feasibility of moving toward larger scale, multi-megawatt or other advanced turbine architectures in response to a major trend in the European wind industry.

Cooperative Research and Testing

Cooperative Research and Testing (up $14.5 million from the fiscal year 2000 appropriation) focuses on addressing the near-term R&D priorities of the U.S. wind

industry. A key focus of this activity for 2001 will be the Wind Powering America initiative, a commitment announced by the Secretary of Energy in June 1999 to dramatically accelerate U.S. wind energy use, with a goal of meeting 5 percent of the nation's total electricity needs from wind power by 2020. Wind power now represents a major economic opportunity for the United States. Substantially increasing the amount of wind generation could lead to: as much as $60 billion in capital investment in rural America over 20 years, generating $1.2 billion in new income for American farmers, Native Americans, and rural landowners; displacing 35 million tons of atmospheric carbon; and creating 80,000 permanent U.S. jobs in the wind industry. The initiative is a broad-based, regionally-tailored program involving close coordination with a multitude of stakeholders across the country to communicate the opportunity for economic development from wind technology, provide technical and market support for pilot projects, and facilitate development and purchase of wind generated power on federal facilities and Native American lands. Funding for the initiative will support both regional program development, as well as targeted projects and activities coordinated at the national level. EERE's six regional offices will play a key role in developing and implementing the regional components of the initiative using funding supplied by the Wind Program.

In fiscal year 2001, support will continue for the world-class National Wind Technology Center (NWTC) in Colorado, which features a user facility that allows U.S. industries to expand testing of new wind energy technologies. A new wind performance monitoring network will be established to provide verifiable data on long-term performance of several large new wind projects. This information is needed for developing strategies to accelerate the use of wind energy under the new rules of the emerging competitive power markets. NWTC capabilities for providing accredited certification testing services will be expanded, and efforts will continue to support Underwriter's Laboratories (UL) in providing certification services to the wind industry. New wind turbine field verification projects will be undertaken to address unique siting, regulatory, technical, and market issues in key regions for wind power development. Under the international clean energy initiative, the Wind Energy program will support analytical efforts to maximize the benefits of grid-connected, distributed wind power, which is expected to be the prevalent mode for wind energy use in developing countries. In addition, performance of advanced wind hybrid power systems will be verified in remote off-grid and mini-grid applications in developing countries.

Renewable Energy Production Incentive

The request for the Renewable Energy Production Incentive (REPI) is $4 million, a $2.5 million increase from fiscal year 2000 funding levels. Annual appropriations provide financial production incentives to stimulate the construction and operation of new, qualified renewable energy facilities owned by state entities, municipal utilities, and electric cooperatives that produce and sell electricity. We estimate that fiscal year 2001 payments to qualified Tier I facilities—which use solar, wind, geothermal or dedicated (closed-loop) biomass resources—will require approximately $0.3 million to pay for electricity generated and sold. Remaining funds will be applied to qualified Tier II facilities, and include non-dedicated (open-loop) biomass resources and landfill methane projects.

REPI motivates the public power and electric cooperative sector of the nation's electric industry to make new investments in renewable energy. These highly leveraged investments in new renewable energy projects give important economic and environmental benefits to the local communities served. Moreover, these projects help move near-term deployment of renewable energy forward in a time of uncertainty due to electric industry restructuring. Continuing REPI payments is essential for continued progress in renewable energy deployment.

However, a legitimate concern exists regarding the need to improve the incentive value of the REPI program. Unlike the certainty of a tax credit, the uncertainty associated with future REPI payments based on potentially variable annual appropriations does make it harder for a qualifying utility to convince financiers to provide long-term financing. The program will explore whether changes in the authorizing law would be needed to create a better incentive value, and, likewise will also use administrative rulemaking procedures should this mechanism offer effective improvement opportunities.

Solar Program Support

The fiscal year 2001 request for Solar Program Support is $6.5 million (up $1.6 million compared to fiscal year 2000; excludes fiscal year 2000 funds for distributed power addressed under transmission reliability), $4 million at this level is for a competitive solicitation which would encourage innovative applications and field valida-

tion of renewable electric technologies, and $2.5 million is proposed for electricity restructuring.

The $4 million requested for a competitive solicitation will speed early deployment of renewable technologies by seeking technology proposals on the best ways to use renewable technologies, either singly or in combination with other renewable technologies, or in hybrid configurations with fuel cells, natural gas or energy storage systems.

The primary objectives of the competitive solicitation program are to: (1) prove the availability of clean, affordable, and reliable electric power supply options for the many remote and/or poor regions of the nation; and (2) obtain essential data on operational performance, reliability, and benefits of renewable energy and hybrid renewable energy systems in various geographic locations and climatic conditions.

The information and experiences gained through this competitive solicitation will help overcome specific impediments to more widespread use of renewable electricity technologies. Currently, market penetration of renewable energy projects are hampered by the uncertainties of electric utility restructuring, the current low price and availability of natural gas, and improvements in gas turbine technology. The increasingly competitive restructured electric environment also favors technologies with low capital costs over technologies with higher capital costs, but lower life cycle costs. Rather than high technical or financial risk, the major hurdle often facing renewable energy projects is identification of renewable projects in the new marketplace that would allow acquisition of long-term power purchase contracts and project financing.

This highly-leveraged activity would designate two targeted areas for competitive awards, systems benefitting Native Americans and systems addressing the needs of federal facilities, in addition to providing for an open solicitation for other applications of these systems. Remote power needs will continue to be addressed in all segments of this solicitation. Of the $4.0 million proposed for fiscal year 2001, up to $2.0 million of the solicitation will be dedicated to projects benefitting Native Americans. Native American projects will require a minimum 20 percent cost-sharing, and the open portion of the solicitation will require at least 75 percent non-DOE funding. For a number of reasons, there are tremendous synergies between renewable energy technologies and the energy needs of Native Americans. Renewable resources such as solar and wind are often abundant on tribal lands. In addition, Native Americans often have substandard or, in some cases, no electricity service at all. Renewable energy technologies can often provide the most cost-effective option for providing electricity on tribal lands and can also be a source of employment for tribes installing and operating such systems on-site.

The fiscal year 2001 budget request for electricity restructuring is $2.5 million, which represents an increase of $1.5 million over fiscal year 2000 appropriations. The fiscal year 2001 electricity restructuring activity consists of two parts, the Technical Analysis and Assistance activity (request of $1 million), and the International Clean Energy Initiative (request of $1.5 million).

The mission of the technical analyses and assistance activity is to provide unbiased technical analyses and assistance to Federal, Native American, and state officials on electricity restructuring issues with a primary focus on public purpose programs, particularly those relating to renewable energy and energy efficiency. This work is critical to renewable and energy efficiency technologies because the emerging restructured electricity markets and changes in the state laws and regulatory rules will have a major impact on future technology deployment.

The transition to competition in electricity markets is challenging for a number of reasons due to the technical complexity of the electricity system, the intricate web of federal, state, and local laws and regulations, and regional differences. As a consequence, policy makers at all levels of government are requesting analyses and technical assistance on a portfolio of market and policy mechanisms to achieve their restructuring goals. Although each state and region face unique electricity policy challenges, there are many common issues. Furthermore, many states lack the resources and expertise needed to address the complexities of electricity restructuring and to keep track of what other States are doing. Consequently, it is often more cost-effective and efficient for certain technical assistance and analysis to be provided at the Federal level rather than duplicated on a state-by-state basis.

In fiscal year 2001, the OPT proposes to add a component ($1.5M) of the international clean energy initiative to the electricity restructuring program. This international clean energy initiative will allow credible analysis of key utility restructuring concepts in the United States and their successful transfer to evolving electric markets in other countries. Technical reports, conferences, training workshops, and other communication mechanisms will be used to transmit the information from the analyses to as wide an audience as possible. Regional networking activities will

be developed that include existing regulatory authorities as well as newly-established regulatory agencies from Central and Eastern Europe and the Newly Independent States. Support will be provided for the measurement and analyses of the social costs of energy production, transportation, and consumption, and for the social costs of rural electrification programs. The successful transfer of these key utility restructuring concepts will facilitate the increased use of U.S. energy technologies in these markets, thereby increasing the benefits of investments in our energy R&D programs.

International Renewable Energy

The fiscal year 2001 budget request for International Renewable Energy is $11.5 million, an increase of $7.7 million from $3.8 million in fiscal year 2000. The mission of this activity is to encourage acceptance and use of renewable energy technologies by developed and developing countries in support of U.S. national interests and policies. With World Bank estimates indicating developing countries alone will require five million MWs of new electricity capacity over the next four decades (the world's total installed capacity today is three million MWs), international markets will provide growing opportunities for U.S. sales of advanced renewable energy and energy efficient technologies and domestic job creation. And these same technologies also hold the greatest potential for reducing emissions and mitigating global climate change.

International Renewable Energy will expand U.S. renewable energy and energy efficiency technology exports to help meet the energy needs of developed and developing countries, reduce the rate of consumption of finite global resources, and address local and transnational environmental issues. Refocused in response to Congressional direction, the International Renewable Energy activity will be restructured into three broad program areas: emerging global environmental and energy issues; facilitating market and trade development; and advancing U.S. energy and environmental security interests.

The emerging global environmental and energy issues will be implemented specifically through and in conjunction with the U.S. Initiative on Joint Implementation (USIJI). USIJI is a DOE-co-led interagency activity that supports the development of flexibility mechanisms under the U.N. Framework Convention on Climate Change (UNFCCC) such as Joint Implementation. This element will also focus on encouraging meaningful participation by developing countries in the effort to reduce worldwide greenhouse gas emissions.

The market and trade development element will accelerate reductions in U.S. technology production costs and advance clean energy technology deployment through overseas market expansion. Activities will focus on stimulating global economic development and regional economic stability, and accelerating domestic economic growth, market competitiveness, and employment. This element will be implemented in key regions through bilateral (e.g., Gore-Mbeki in South Africa) and multilateral (e.g., Asia Pacific Economic Cooperation, Hemispheric Initiatives and International Energy Agency) technology cooperation activities and information exchange and dissemination. Private sector technology development will be encouraged while seeking opportunities for leveraging U.S. funds and stimulating deployment in strategic and emerging markets through project-based activities.

The energy and environmental security element is designed to advance U.S. strategic interests in bilateral and multilateral energy and environmental security activities and will provide specialized assistance in the utilization of appropriate technologies. This element will be implemented in support of existing and emerging bilateral and multilateral treaties and agreements. This element will also assist DOE in meeting U.S. obligations and commitments to provide disaster relief and assistance by facilitating private sector technology development and deployment in strategic and emerging markets.

International Renewable Energy also includes the International Clean Energy Initiative (ICEI). This Initiative was discussed previously in my statement.

National Renewable Energy Laboratory (NREL)

The National Renewable Energy Laboratory is a world class facility, but is losing stature because of a slowly degrading physical plant. The fiscal year 2001 request of $1.9 million for the National Renewable Energy Laboratory (NREL), (a 72.7 percent increase from the fiscal year 2000 appropriation), includes the necessary repairs, maintenance, upgrades, new construction and facility modifications to protect the federal government's investment and ensure that NREL remains the nation's exemplary center for R&D of energy efficiency and renewable energy technologies. The request will fund: replacement of a Nuclear Magnetic Resonance Spectrometer which is essential scientific equipment; information technology equipment upgrades

and replacements; a substantial upgrade of the fire detection and response capabilities in the Field Test Laboratory Building, NREL's oldest building; and a substantial addition to the Site Entrance building to house additional security personnel and equipment.

Geothermal Energy Technologies

The Geothermal Energy technologies request for fiscal year 2001 is $27 million, an increase of $3.4 million over fiscal year 2000 appropriation levels. Geothermal Energy technologies works in partnership with U.S. industry to establish geothermal energy as a sustainable, environmentally sound, and economically competitive contributor to the U.S. and world energy supply. These joint efforts sponsor R&D that leads to advanced technologies to improve reliability, reduce environmental impacts, and lower costs of geothermal energy systems. Competition is key to the cost-effective management of geothermal R&D activities. Virtually all participants sponsored or funded by Geothermal Energy technologies outside the national laboratories will be chosen through competitive solicitations. The budget request supports three key goals: (1) reduce the levelized cost of generating geothermal power to 3–5 cents per kilowatt-hour by 2007; (2) double the number of states with geothermal power facilities to eight by 2006; and (3) supply the electrical power or heat energy needs of 7 million homes and businesses in the United States by 2010. The $27 million request is allocated among: geoscience and supporting technologies ($11 million); drilling research ($5.5 million); and energy systems research and testing ($10.5 million).

Based on the excellent potential of geothermal resources in 19 western states, GeoPowering the West will be launched in fiscal year 2001. The goal of this Initiative, providing 10 percent of the electricity consumed in western states by 2020, could be realized because it is estimated that about 300 cities and towns in the western U.S. are adjacent to geothermal deposits. Research and development activities to improve drilling efficiencies and recycling of waste-water will be accelerated.

Geoscience and supporting technologies research

Geoscience and supporting technologies research ($11 million) will continue to improve and expand our knowledge base of how geothermal systems form and evolve. This knowledge is essential to finding and using geothermal resources in the most efficient and economic manner. The enhanced geothermal systems project will verify industry's most promising conceptual designs in cost-shared field experiments. These experiments will focus on extending the productivity and lifetime of geothermal reservoirs through rock fracturing and fluid injection. Exploration technology will remain a strong focus of the program with continued collaboration with industry on 3D-seismic techniques to locate and characterize new geothermal fields. Various geophysical exploration methods will be integrated to develop smart systems which will select more reliable targets. Greater effectiveness in locating geothermal resources will reduce the number of costly, non-productive wells.

Drilling research

Under drilling research ($5.5 million), Geothermal Energy technologies will give highest priority to development of the geothermal advanced drilling system which will give economic access to the extremely large geothermal resources contained in rocks at great depth. One element of the Geothermal Advanced Drilling System is a high speed data link that will transmit a variety of real-time drilling data to the surface for decision making while drilling. About 50 percent of the cost of developing the high speed data link will be provided by major private sector partners.

Energy systems research and testing

Energy systems research and testing ($10.5 M) will see a major expansion in fiscal year 2001 as Geothermal Energy technologies seeks a broader, more substantial role for geothermal energy in the nation's economy. Field verification of small-scale geothermal power plants (<1 MW) will bring about the use of geothermal energy in new locations. This effort is key to achieving the goal of doubling the number of states with geothermal power facilities by 2006. Geothermal Energy technologies will help U.S. industry to bring the benefits of geothermal energy to developing countries through the international clean energy initiative. Prefeasibility studies, resource assessments, technical assistance and outreach to enable countries to make informed decisions about the use of their resources will be used.

Hydrogen Technologies

The request for Hydrogen Technologies is $23 million, a decrease of $2.0 million from the fiscal year 2000 appropriation. Industry is investing substantially in both hydrogen production systems and the development of the Proton Exchange Mem-

brane (PEM) fuel cells that require a hydrogen stream to operate. In a recent announcement, DOE joined the California Fuel Cell Partnership. This Partnership is comprised of the State of California (Air Resources Board and Energy Commission), auto manufacturers (Daimler Chrysler, Ford, Volkswagen, and Honda), energy providers (ARCO, Texaco, Shell), and a fuel cell company (Ballard Power Systems). By 2003 the Partnership will test 20 fuel cell-powered buses and 50 fuel cell-powered light duty vehicles in regular service. These ventures will lead to early commercial activities for the distributed production, storage and utilization of hydrogen by 2003.

Hydrogen technologies is authorized by the Hydrogen Future Act of 1996 to fund those projects which are evaluated on a competitive basis. In fiscal year 2000, the Department funded 94 percent of the projects in Hydrogen technologies competitively. The fiscal year 2001 request will support a balanced portfolio to increase market penetration of renewable/hydrogen energy systems and hydrogen-powered vehicles, and long-term research and development in the production of hydrogen from renewable resources through a similar competitive process. The program focuses on three key activities: core research and development ($13 million), technology validation ($7.5 million), and analysis and outreach ($2.5 million).

Core research and development

Core research and development (down $0.4 million from the fiscal year 2000 appropriation) supports R&D on hydrogen production, storage and utilization. The funding will support thermal conversion processes that produce hydrogen from natural gas with a 25 to 35 percent decrease in the cost of producing hydrogen over conventional processes and long-term research programs for photobiological and scaled-up photoelectrochemical processes. These key activities, in conjunction with the industrial development of the PEM fuel cell, will enhance the ability of the industry to consider low-cost hydrogen options for the power, industry and transportation market sectors by 2004.

Hydrogen storage R&D is focused on developing and field validating hydride and carbonaceous materials for the high density storage of hydrogen at low temperatures for power and transportation applications. The funding will support one project to characterize the properties of compressed hydrogen in a series of environmental tests and compare the results to other gaseous fuels.

Utilization technology research is focused on developing and demonstrating end-use power systems that are safe, and have near-zero or zero emissions with an overall generation efficiency greater than 45 percent. A newly developed solid state hydrogen detector will be fabricated and integrated with a new, low-cost PEM fuel cell for a field test.

Technology validation

Technology validation (down $1.3 million from the fiscal year 2000 appropriation) supports 50/50 cost-shared ventures with industry on hydrogen vehicle fueling stations, vehicle-mounted hydrogen storage systems, reversible fuel cells to operate with renewable systems, and small hydrogen fuel cell systems for remote power applications. The fiscal year 2001 request supports the operation of a reversible fuel cell with 60 percent round-trip efficiency; the incorporation of high-pressure hydrogen storage on vehicles; the completion of a quick-fill refueling station to service shuttle buses as well as the installation and testing of a PEM fuel cell system to provide on-site power in Las Vegas, Nevada; and the design and construction of small-scale fuel cells for remote applications.

Analysis and outreach

Analysis and outreach conducts scenario planning, portfolio and technology analyses to determine what steps are required to transition to a hydrogen energy economy. Technology analyses will periodically review specific areas (i.e., photoelectrochemistry, storage, etc.) to ensure that research is of high quality and of significance to the overall objectives of the program.

Hydropower Technologies

For fiscal year 2001, the Department is requesting $5.0 million for Hydropower Technologies, an increase of $0.79 million over fiscal year 2000 funding. With this funding, Hydrogen Technologies will continue proof-of-concept testing of an innovative, "fish-friendly" turbine design (competitively selected in earlier activities) and continue experiments to develop biological performance criteria for advanced turbine design, as well as testing small environmentally-friendly turbines. OPT will also initiate the competitively selected testing of large "fish-friendly" turbines to determine operational environmental performance.

Once complete, these new turbines can replace equipment at existing facilities where fish mortality concerns may cause a reduction in generation. Hydropower pro-

vides approximately 10 percent of the total U.S. electricity generation today. Diminished power production from this clean baseload power resource would have serious environmental and economic impacts on America. This cost-shared program with industry would maximize power generation from our existing hydropower facilities and help develop an important export market for U.S. companies.

Renewable Indian Energy Resources

The fiscal year 2001 budget request for the Renewable Indian Energy Resources program is $5 million, an increase of $1.1 million from fiscal year 2000. Funding in fiscal year 2000 was earmarked for four projects in Alaska. America has over 550 tribes and many do not have access to clean, reliable, efficient sources of electricity. In fiscal year 2001, funds will be used to initiate the tribal energy program which will enable Native American Tribal governments, and organizations to gain expertise in energy planning capabilities, particularly for remote settings, and in developing both conventional and renewable energy resources.

This effort reflects DOE's commitment to a government-to-government relationship as expressed in its American Indian Policy. Inadequate recognition and insufficient energy services on Native American lands are well documented even though many reservations have an abundance of fossil and renewable energy resources. Historically, Tribes have not had ready access to energy development, energy efficiency, and renewable energy assistance.

The primary goal of the Tribal energy program will be to provide tribal governments the same supportive framework that is now in place for the states as in DOE's state energy program which funds projects through state energy offices across the country. It will serve as a focal point for a wide range of activities that promote a cleaner environment, provide economic development enhancement opportunities, and efficient use of Tribal energy resources consistent with cultural, Tribal, and environmental concerns.

Electric Energy Systems and Storage

For Electric Energy Systems and Storage, $48.0 million is requested in fiscal year 2001, an increase of $10.2 million from fiscal year 2000. This activity is working with partners to develop advanced power delivery systems that will enable the efficient and reliable delivery of electric services for consumer use. The effort includes transmission reliability research ($11.0 million), high temperature superconductivity ($32.0 million), energy storage systems ($5.0 million), and climate challenge (no funds requested).

Within DOE, the Secretary has established an Energy Grid Reliability Initiative to address the growing number of electric power blackouts and brownouts, as well as the quality of electricity that is delivered. This initiative addresses the critical R&D needs for energy delivery systems. The electricity component of this initiative consists of transmission reliability (power system reliability and distributed power) and energy storage systems. The transition to restructured, competitive electric markets coupled with growing consumer demand for electricity and constraints in the nation's transmission and distribution systems, requires the development of an integrated set of advanced power delivery system technologies to enable the reliable delivery of electric services for consumers.

Overcoming regulatory, technical, and institutional barriers to distributed power will provide more efficient use of the power delivery system by producing electricity close to its point of use. The development of lower cost, high performance power electronic controllers coupled with advanced energy storage systems will provide improved power quality; provide an ability to fully integrate and reliably operate the power delivery system with the full spectrum of central and distributed generation technologies; and enable real-time systems control of the existing transmission and distribution systems to result in additional operational capacity, security, and reliability.

The development of high temperature superconducting equipment will significantly reduce losses in the generation, delivery, and end-use of electricity and will relieve power delivery system constraints, particularly in urban areas, through the deployment and use of very high capacity transmission and distribution cables in key locations.

The fiscal year 2001 budget request for transmission reliability research is $11.0 million, an increase of $8.0 million from the fiscal year 2000 appropriated level. Transmission reliability has two key activities: power system reliability ($8.0 million), and distributed power ($3.0 million).

Power system reliability

Power system reliability (up $5.5 million from the fiscal year 2000 appropriated level) will develop advanced measurement/information systems and advanced power

electronic controls to monitor and control the power delivery system in real-time, and facilitate the operation of efficient electric markets. In addition to the program carrying out activities to determine how new market structures are affecting grid reliability, it will develop reliability technologies and policy options to provide incentives for market participants to invest in adequate power system upgrades and R&D to assure reliable electric power delivery in the future. Real time control of the power delivery system will also facilitate the integration of distributed resources into the system, providing individual customers the opportunity to supply their own energy, enhance system reliability, and sell energy in a competitive market.

Distributed power

Distributed power (down $0.5 million from the total fiscal year 2000 funding when $3.0 million Solar Program Support fiscal year 2000 appropriations for distributed power are included in the calculations) continues multi-year cooperative efforts with industry initiated under a competitive solicitation to address barriers to the use of distributed generation. These efforts focus on the development of advanced technologies for the interconnection of distributed power generation systems; modeling; and conducting engineering analyses, case studies, testing and evaluation to accelerate the development and validation of a national interconnection standard.

It is anticipated that transmission reliability activities will last five to ten years in order to ensure that R&D for reliable systems and competitive markets is maintained until new market and/or regulatory structures are established and provide the incentives for the private sector to assume this work. The program will be reassessed each year to determine the need for federal involvement depending on the nature and implementation needs of new regulations, and the impact of market forces

High Temperature Superconductivity

The fiscal year 2001 budget request for high temperature superconductivity is $32 million, an increase of $0.6 million. Funding for this program is divided between the superconductivity partnership initiative ($14.0 million), second generation wire initiative ($8.0 million), and strategic research ($10.0 million). The program is on track for accomplishing two major technological goals: solving the difficult problem of manufacturing electrical wires from high-temperature superconducting materials while, in parallel creating designs of super-efficient electrical systems. The outcome will be resistance-free electrical wires able to carry 100 times the current of conventional alternatives and advanced systems that have only half the energy losses, are half the size of conventional alternatives of the same power rating, and cut energy losses in half.

The Superconductivity Partnership Initiative will support seven major projects to develop first-of-a-kind electrical systems that can provide quantum improvements to the efficiency and capacity of the national electrical grid. These include transmission cables, transformers, large motors, flywheel energy systems, and magnetic separation systems. The revolutionary equipment emerging from the program in the 2005—2010 timeframe will play a major role in meeting the new demands of a competitive electricity industry for increased capacity and reliability. Superconducting cables will relieve congestion at critical parts of the grid as well as improve delivery efficiency. They will also accommodate load growth in urban areas by repowering existing infrastructure ducts without the need for acquiring new property. Superconducting transformers will accommodate increased demand for electricity without the need for construction of new substations and will protect against accidental fault currents that now cause serious damage and power outages.

The Second Generation Wire Initiative is crucial to producing superconducting wire that meets the program's performance goals. Four industrial consortia will be working with the national laboratories to scale up recent discoveries that are the basis for this initiative. Private sector participants leverage program funds with 50 percent cost-sharing.

Strategic research

The strategic research element (up $0.6 million from fiscal year 2000 appropriations) is the incubator for discoveries and innovations that have characterized this successful program. The activities supported include in-house national laboratory research and research carried out collaboratively with private companies under 50 percent cost-shared agreements. The requested level of funding will adequately support multi-disciplinary research teams that have made major breakthroughs in the past, and will also support a number of cooperative research projects with industry. Important leveraging is obtained through integrating research funded by the DOE Office of Science and leveraged research at two NIST (National Institute of Science and Technology) laboratories where each program dollar is matched by two NIST

dollars. The funding increase will be used to initiate high priority tasks identified in the cryogenic roadmap. Efficient and reliable cryogenic systems that also meet performance needs are needed for all superconducting power applications.

Energy storage systems

The $5.0 million request for the energy storage systems program (up $1.6 million from the fiscal year 2000 appropriation) will fund focused research on energy storage technologies which will be integrated with the power electronic control development under power system reliability to improve power delivery system reliability and operation, improve power quality, and enhance technology choices in a competitive utility environment. Program emphasis will be placed on battery systems integration and on the development and evaluation of advanced storage technologies. All projects will be carried out in close cooperation with industry.

No funding is requested for the Climate Challenge program in fiscal year 2001.

DEPARTMENTAL ENERGY MANAGEMENT PROGRAM

In today's environment where the electricity industry is being restructured, the reliability of the nation's energy supply is variable, and energy prices are fluctuating, DOE must have new strategies for improving energy efficiency and managing utility costs. The Federal Energy Management Program is requesting $5 million in funding to support a new initiative to manage both the utility demand and supply functions at DOE sites.

This fiscal year 2001 budget request for a Departmental Energy Management Program (DEMP) will allow DOE to fund energy and efficiency projects at 71 DOE sites across the nation, develop model programs for energy efficiency and utilities management, and expand the use of energy savings performance contracts. We will evaluate renewable, natural gas and on-site use of combined heat and power to increase the reliability of our supply. We will evaluate and retrofit DOE office buildings to acquire Energy Star labels, actively participate in the procurement of energy efficient products, demonstrate the use of energy efficient technologies at DOE sites, and request cost-effective green power in our competitive electricity procurements.

Our experience to date informs us that smart energy management—managing both the demand and supply aspects of utilities—is good business. Our total utility bill in 1985 was $330.7M. In 1998 our total bill was $257.0M—almost $74 million less. If we had done nothing to conserve energy and our energy consumption today were the same as 1985, our utility bill today would be $225M higher. This equates to a 47 percent reduction in utility costs in 1998 dollars.

We have already reduced our federal energy consumption by 36 percent compared to 1985. This budget request will continue our movement toward reducing our energy use by 40 percent in 2005, while providing energy and water cost savings for the government and the taxpayer. Funding for this program will allow DOE to demonstrate strong leadership in energy management.

PROGRAM DIRECTION

Program Direction provides the federal staffing resources and associated funding to support the management and oversight of the Solar and Renewable Energy Programs. This activity includes all funding for support service contractors, equipment, travel, crosscutting activities, and Assistant Secretary initiatives. This permits the continuation of a diverse array of Solar and Renewable projects to be integrated into a national portfolio of world renowned research. Program Direction encompasses two principal activities: (1) headquarters executive and program management; and (2) program operations at the Golden Field Office and the Idaho Operations Office. We have requested $18.159 million for this activity.

The fiscal year 2001 request provides for continued implementation of Workforce 21 increases to off-set the adverse impacts of prior downsizing. In addition, EERE has adopted smarter, more effective business and management practices and, as revealed in a workforce analysis, these efforts have greatly reduced the need for most—but not all—of the staff lost due to downsizing. EERE's Workforce 21 strategy is to concentrate the majority of the critical hires to the technical and professional category, leaving the clerical/administrative, and manager/supervisor staffing levels virtually the same.

CONCLUSION

Thank you once again, Mr. Chairman, and members of the Subcommittee for the opportunity to discuss our fiscal year 2001 budget request. I hope you agree that the management improvements we have instituted—and continue to refine—are enhancing the value received by American citizens for their investment. We can now

build on past success while planning for the future. The promise of clean energy technologies is clear and an increased commitment by the public and private sectors is needed to realize the full benefits of our investment. We will redouble our efforts to move our nation closer toward our goal of Clean Energy for the 21st Century.

STATEMENT OF WILLIAM D. MAGWOOD

Senator DOMENICI. Mr. Magwood.

Mr. MAGWOOD. Thank you, Mr. Chairman, members of the subcommittee.

Senator DOMENICI. I want to compliment you on your office, also. Obviously, we do not spend a lot of money there yet, but I really think your leadership is making a dent of a positive nature. And I appreciate it very much.

Mr. MAGWOOD. I appreciate those comments, Mr. Chairman. I am pleased to be here today to talk about our 2001 budget request. Our written statement has a great deal more information for the record.

First, I would like to thank you, Mr. Chairman, and the subcommittee for the vision that you have shown over the last couple of years in helping us revitalize the nuclear energy program. As you know, the nuclear energy program has gone from being one of the biggest programs in DOE at over half a billion dollars a year funding in about the early 1980s down to a low point in 1998 at almost zero. We have recovered significantly since then and I think we are moving in the right direction.

With your support, the Department has led a resurgence internationally in the investigation of a wide range of nuclear technologies, and it has reenergized the research community in this country. We have seen hundreds of researchers with new, creative ideas compete for our NERI awards.

We have seen the downward slide in the numbers of nuclear engineering students halted and a new option for nuclear education brought to students who never had that opportunity before. We have seen the international research community race to collaborate with us to develop Accelerator Transportation of Waste, and to provide additional funds to companies, universities and labs, and universities and companies in the United States who are working on DOE-funded research.

DOE research has been very successful over the decades, Mr. Chairman. We have invested about $7 billion in the commercial light water reactor technology over the decades. And as a result, nuclear energy now provides about 22.8 percent—which is a high point for nuclear energy—of all the electricity generated in this country. Most nuclear power plants now generate electricity at around 1 cent per kilowatt hour, which is quite an accomplishment.

The private sector has made great strides in reducing their costs. And a big success was achieved last month with the renewal of the license for the Calvert Cliffs Nuclear Power Plant. So we are very optimistic about the future. However, I think that we still have a lot of issues to deal with.

For nuclear energy to expand in the future, we must deal with many important issues, such as the cost of constructing new plants, concerns about proliferation, and the issue of nuclear waste. All these must be addressed in order for nuclear energy to expand.

But as you know, the inherent environmental benefits of nuclear are prompting new discussions across the world about the future of nuclear energy, as the world focuses on issues such as clean air, reducing CO_2 emissions, reducing ground-level ozone, and preventing acid rain. Nuclear power provides a real option to deal with these issues.

NUCLEAR ENERGY RESEARCH INITIATIVE

At the core of our activities, we successfully launched the Nuclear Energy Research Initiative, or NERI, program. NERI is an investigator-initiated peer reviewed research program to advance revolutionary nuclear power technologies. There are currently approximately 46 research projects under way at 20 universities, 8 research labs and 14 private sector companies working individually and collaboratively.

This year we received proposals for another 120 projects. From these we will select the best and most creative 7 or 8 proposed projects. Our fiscal year 2001 budget request would enable us to increase the number of research activities by more than 70 by the end of the next fiscal year.

GENERATION IV NUCLEAR POWER SYSTEMS

A major area of focus for the NERI program this year and a growing area of interest internationally are the Generation IV nuclear power systems. Generation IV, which has become the worldwide lexicon to describe nuclear power systems that will be competitive with natural gas and other energy options for the future, use safe proliferation resistant technologies to provide a greater range of options for nuclear power across the world.

In January, senior policy representatives from eight governments came to the United States to discuss the prospects for Generation IV and consider how we might work together to achieve its goals. We provided you in the package a joint statement issued by the representatives of the governments of Argentina, Brazil, Canada, South Africa, South Korea and the United Kingdom, as well as the United States, that initiates a multilateral consideration of this important subject.

Last week international experts from these countries met again in Washington to discuss the research under way in our respective countries and how multilateral research on Generation IV technologies could be conducted. Next month about 100 experts from the United States and these countries will meet to discuss the criterion attributes of Generation IV technologies. These activities will result in the preparation of a Generation IV roadmap which we plan to begin developing this fall. A proposed international NERI program could be the center point of this international effort.

MEDICAL IOSOTOPES

Shifting now to another major focus of my office—medical isotopes. Many people do not know the enduring role the Department has served in developing, producing and delivering isotopes for research, medical diagnosis and treatment. Using our facilities at Los Alamos, Sandia and other sites, we are the provider of virtually all

the important emerging medical isotopes available to American researchers.

And this chart, which I think you will find particularly interesting, demonstrates that we have a wide range of emerging isotopes that are now under examination by researchers across the country. And it could some day lead to cures of everything ranging from breast cancer to prostate cancer to colonrectal cancer and many other maladies.

Medical isotopes are a staple in today's advanced American medical infrastructure. Use of isotopes will expand dramatically in the future. A report issued by our advisory committee, NERAC, projects the demand for medical isotopes will dramatically increase in this century, growing 8 to 17 percent each year over the next 20 years. Unfortunately, despite the fact that the cure for many terminal illnesses, including brain and prostate cancers, may be laying in wait in our isotope program, funding for this program has been dropping dangerously.

In the past, we were able to rely on revenues from the sale of commercial isotopes. But we are privatizing the commercial part of our program aggressively, and far less revenue comes in from researchers we are committed to support.

ADVANCED RADIOISOTOPES POWER SYSTEMS PROGRAM

Even more disturbing trends have been experienced by our advanced radioisotope power systems program. For almost 40 years the department has provided the power systems needed for space exploration and important ongoing national security applications.

The unique characteristics of these systems make them especially well suited for application where large arrays of solar cells or batteries are not practical. For example, at large distances from the sun, where there is little sunlight, or in harsh environments.

You may have heard of NASA's decision to once again extend the mission of the Galileo spacecraft. And there are plans to pair it with the Cassini probe for observations of the planet Jupiter later this year. You may not have heard that because of the truly remarkable performance of our power systems, the Pioneer spacecraft launched in 1972 and now 7 billion miles away is still sending signals to earth and will soon pass through the heliosphere, the very outer edge of the solar system.

Senator REID. How many miles away?

Mr. MAGWOOD. Seven billion. It is the farthest manmade object to exist. And we are still in communication with it, since 1972.

But if we are to continue and expand our success, we must maintain an adequate infrastructure. While NASA and other users pay all the costs associated with actually providing these systems, DOE owns and must maintain the infrastructure to develop, build and test them.

In recent years, the program has seen its budget drop dangerously. I would hope that we here today would not want it said that for the lack of a relatively small annual investment, we close the doors to space exploration for succeeding generations.

While our budgets are shrinking, the future is calling for action. Most of the key missions for U.S. space exploration over the next 20 years, sustained exploration of Mars, human missions to the

planets, nearly all the activities that capture the imagination of the American people, will require the use of space fission power systems. As illustrated by this chart, which we developed with NASA experts, the long lead time required for development of these power systems means we must begin our efforts very soon.

We have proposed beginning with a very small, very modest interagency assessment of special purpose fission technology to determine the needs and requirements of these systems. With DOE leadership, other agencies are expected to participate, providing funds and personnel to support the effort. User agencies, such as NASA and DOD, will ultimately pay all the development costs. But because of the generic nature of these technologies and the expertise that exists at our laboratories, the responsibility falls to DOE to take the first critical step.

In closing, over the last couple of years, we have made great strides in the nuclear energy program. We are very proud of how much we have accomplished with limited resources. Our program is firmly focused on the future, and we look forward to continuing to work with this subcommittee to bring that future closer. I look forward to answering your questions.

Senator DOMENICI. Thank you very much.

[The statement follows:]

PREPARED STATEMENT OF WILLIAM D. MAGWOOD

Mr. Chairman, and members of the Subcommittee: It's my pleasure to present the Department of Energy's fiscal year 2001 budget request for the Office of Nuclear Energy, Science and Technology. We are proposing a $306 million investment in fiscal year 2001 to conduct vital research and development; to enhance the Nation's science, technology and education infrastructure; and to manage NE's Federal nuclear facilities and materials.

The investments we propose to make in nuclear energy, science and technology are driven by the recognition that nuclear technology serves the national interest for reliable, affordable and environmentally sustainable electricity; for space exploration and expanding our understanding of the universe; and for advancing isotopes for medical diagnosis and treatment of devastating illnesses.

These investments are also based on the understanding that in order to meet the challenges and accelerate innovation in the 21st Century, we must begin today training and preparing tomorrow's scientists and engineers and providing focused investments in the science and technology infrastructure. Finally, these investments are based on the 1997 and June 1999 recommendations of the President's Committee of Advisors on Science and Technology (PCAST) and DOE's Nuclear Energy Research Advisory Committee (NERAC).

Mr. Chairman, this budget request builds on the Administration's and Subcommittee's investments of the last couple of years, with modest growth in our research initiatives to prepare for scientific innovation in this century and to continue rebuilding U.S. technology leadership, which had waned over the last decade. Principally, in fiscal year 2001 we are requesting additional funding for Nuclear Energy Research Initiative (NERI), to enable support of more of the best ideas coming out of our universities, laboratories, and industry; and to launch an International-NERI program to leverage U.S. research activities on advanced nuclear technologies with new investments made by the research organizations of other countries. In total, we are proposing $56 million for nuclear energy research activities in fiscal year 2001.

This budget request also provides funding necessary to: begin design of depleted uranium hexafluoride conversion facilities; to maintain the Fast Flux Test Facility in a safe standby condition and begin implementing the Secretary's final decision on its future; continue implementing the decision made this year on whether to initiate full-scale treatment of DOE's remaining sodium bonded fuel; continue the Advanced Nuclear Medicine Initiative by providing critical isotopes and financial support for medical research; and maintain the support, research, and utility infrastructure at the Test Reactor Area and Argonne National Laboratory-West in Idaho.

Mr. Chairman, I want to thank you for your leadership on this Subcommittee and for the commitment and support of the Subcommittee in advancing nuclear energy

technologies. The last year of the last century was indeed a banner year for nuclear power. The Nation's existing nuclear power plants surpassed peak operating performance records set over the last few years, increasing plant capacity to 85.5 percent. Nuclear plants generation increased to 728 billion kilowatt-hours, setting an all-time record for their share of electricity generation—almost 23 percent of total generation. Additionally, the industry is aggressively and successfully moving forward with plant relicensing—extending operation of the fleet of existing plants another twenty years. Last month, with the unanimous vote of the Nuclear Regulatory Commission, the two Calvert Cliffs reactors in Maryland became the first in the Nation to have their operating licenses renewed. All of these significant changes and accomplishments bode well for continued use of nuclear power in the U.S. Also on the Federal front, with the Committee's support, we are engaged in many exciting, promising research projects and strategic planning activities that will help shape the future of nuclear energy in the United States and globally.

We are in a time of tremendous opportunity, where the research and policies we engage in today will define the technologies that are deployed over the next 20 or more years when demand for energy is expected to increase substantially. The rate of turnover in energy supply systems is typically slow—energy technology life-spans are typically four or more decades; transmission system lifetimes even longer. For these reasons, we need to focus today on tomorrow's energy needs.

I'd now like to discuss in more detail, drivers for nuclear energy research, how we have structured and improved our processes for conducting research, our major accomplishments, and provide more detail on the fiscal year 2001 budget request and how this request helps position the Nation for the next 50 years of innovation.

Fiscal Year 2001 Budget Authority

[In thousands of dollars]

Program Element	*Request*
Nuclear Energy R&D:	
Advanced Radioisotope Power Systems	31,200
Test Reactor Area	9,000
University Reactor Fuel Assistance and Support	12,000
Nuclear Energy Research Initiative	35,000
Nuclear Energy Plant Optimization	5,000
Subtotal	92,200
Isotope Support	17,215
Termination Costs	74,000
Fast Flux Test Facility	44,010
Uranium Programs	53,400
Program Direction	27,620
Offset from revenue	(2,352)
Total nuclear energy, science and technology request	306,093

TRENDS AND CHALLENGES IN NUCLEAR ENERGY SUPPLY

The International Energy Agency projects that world energy consumption will increase substantially over the next twenty years, requiring over 3,500 gigawatts of new generating capacity by 2020. Clearly, the largest growth will take place in the developing countries—China and India alone will add over 20 gigawatts of generating capacity by 2020. Today, 434 nuclear plants provide electricity worldwide—16 percent of electricity supply worldwide.

Although some countries may reduce their market share of nuclear energy for electricity generation, many countries, especially the developing countries or those with limited natural resources, are likely to increase their dependence on nuclear energy. In particular, the recognized benefits of nuclear energy are prompting new discussions on the future of nuclear energy as world attention focuses on clean air, preserving the earth's climate, avoiding ground-level ozone formation and preventing acid rain.

Nuclear power plants operating in the U.S. today account for over 20 percent of electricity generation and operate on average at less than 2 cents per kilowatt-hour. Over the last decade the nation's existing nuclear plants have steadily improved their operating performance, reaching record operating capacities in 1998 and again in 1999 (79.5 percent in 1998 and 85.5 percent in 1999), thus increasing their share of electricity generation. Additionally, between 1973 and 1997, nuclear generation avoided the emission of about 82 million tons of sulfur dioxide and more than 37

million tons of nitrogen oxides. This is a carbon avoidance of about 1.5 million tons per year per operating nuclear power plant. Continued operation of these plants is therefore, very important for meeting not just demand for electricity but today and tomorrow's environmental needs.

In the decades ahead, the existing U.S. nuclear plants will remain an essential part of our nation's diverse energy resource portfolio, fueling our economy with a secure, domestic source of electricity. The safe, long term operation of the existing nuclear power plants serves our national interest by providing for energy security and diversity, and providing for reliable and affordable energy—a fundamental underpinning of economic prosperity.

In the longer term future, for commercial nuclear power to expand, obstacles to its continued use must be satisfactorily resolved—issues such as unattractive economics caused by historically high construction costs, concerns about the links between nuclear fission systems and nuclear weapons development, and concerns about generation and disposal of nuclear waste.

In 1997 and again in June 1999, the President's Committee of Advisors on Science and Technology affirmed both the important role that nuclear energy can play in the short and long-term future and articulated the challenges to nuclear energy, recommending that the Department initiate specific, focused research to address these challenges. The nature of our R&D initiatives has been shaped by these recommendations and by the guidance we have received from the NERAC.

A STRATEGIC SHIFT IN NUCLEAR ENERGY RESEARCH AND DEVELOPMENT

Over the past several years, we have reinvented the Federal role in nuclear energy research and development. Recognizing the realities of today's fiscally constrained environment, we have reorganized how we conduct research, how best to accelerate innovation and how to assure the best return on the investment for the Nation. We have returned to a more focused Federal role in conducting R&D—that is, investing most of our research portfolio on long term, higher risk basic research aimed at reducing or eliminating significant barriers to future use of nuclear energy. This is research that typically is not within the shorter-term planning horizon of industry. Our R&D programs are designed to promote innovation and breakthrough technologies while limiting both the rate and duration of federal investment—making good decisions on when to expand research that is promising, when to hand-off successful projects to the private sector and when to terminate projects that fall short. As mentioned above, we have also established an independent advisory board, the Nuclear Energy Research Advisory Committee (NERAC) to help guide the future direction of our R&D initiatives, including identifying promising research that warrants additional investment.

NE's largest research activity, the Nuclear Energy Research Initiative (NERI), reflects this fundamental shift in the way in which research is scoped, funded, conducted, and evaluated. Focused on obstacles to long-term use of nuclear energy, NERI promotes investigator-initiated, peer reviewed research, enabling us to consider a broad range of innovative ideas brought forth from industry, laboratory research organizations and the private sector, that in the future could lead to more significant stand-alone research initiatives.

As I think most of us would agree, in order for nuclear energy to expand in the long-term, we must successfully deal with issues such as plant economics, waste, and proliferation. For example, in the longer term, by changing the way we manage and design commercial nuclear fuel, we may be able to quite effectively address proliferation concerns, making it more difficult to use nuclear power systems to advance nuclear weapons programs. Technology may be able to reduce or even eliminate the production of plutonium in spent fuel. This area of proliferation-resistant fuel cycles and reactors are an area of major investigation in our NERI program.

In the first year of the NERI program, the Department awarded three research grants for the development of proliferation resistant reactor technologies and three others for the development of proliferation resistant fuel cycle technologies. By exploring these advanced technologies such as modular reactors with long life cores and thorium-based fuel cycles, we may find technology-based solutions to one of nuclear's greatest challenges.

To further advance the research in this area, the NERAC has chartered a panel to identify, by Summer 2000, the various technical opportunities for increasing the proliferation resistance of fission systems and fuel cycles—both near-term opportunities for increasing proliferation resistance of existing technologies and long-term opportunities for advanced and future generation commercial nuclear power systems. In addition, we will be carefully coordinating NERI research in this area with the Long-Term Proliferation Program for Russia. Our office would co-manage the

NERI proliferation-resistant technology component of this program with the Office of Nonproliferation and National Security.

Another major area of focus for the NERI program this year, and an area of growing interest in the U.S. and with the international research community, are Generation IV reactor technologies. Generation IV reactor technologies are next generation advanced technologies that are economically competitive with combined cycle gas fired systems and deployed over the next 20 years when demand for electricity increases significantly worldwide. In January, the Department sponsored a workshop with representatives of the governments of Argentina, Brazil, Canada, France, Japan, South Africa, South Korea, and the United Kingdom to begin discussing the attributes of Generation IV reactor systems. The workshop included observers from the International Atomic Energy Agency, the OECD Nuclear Energy Agency, the U.S. Department of State, American Nuclear Society, and DOE's Nuclear Energy Research Advisory Committee. Following the conclusion of the workshop the participants issued a joint statement agreeing to pursue Generation IV nuclear power systems as a potential next generation energy option for the future.

In April, as a follow-on to the January workshop, another international meeting with about 50 technical experts will be held in Washington, DC to develop specific recommendations on the future direction of multilateral cooperation on Generation IV technology. This May, we will also sponsor a meeting with established and emerging experts from U.S. and international universities, industry, and laboratory research organizations to begin the process of establishing requirements and attributes for Generation IV reactor systems and determining how those criteria would be satisfied. The results of this workshop will become the basis of a technology roadmap for Generation IV reactor technologies.

In fiscal year (FY) 2000, another major shift in our research priorities occurred with the initiation of the Nuclear Energy Plant Optimization (NEPO) program. Recognizing the important role that the nation's existing nuclear power plants continue to serve over the next several decades in meeting demand for electricity in an environmentally sound manner, $5 million was provided in fiscal year 2000 for NEPO research conducted in cost-shared cooperation with the Electric Power Research Institute, the research arm of the electric power industry, for the purpose of improving existing plant operations, safety, and reliability.

This $5 million represents a federal investment in intermediate term, higher risk research that is needed to increase the pace of innovation for developing new technologies for today's nuclear power plants. While industry's $85 million annual investment is focused on a short term horizon, funding "just-in-time" solutions to problems for existing plants, our investment serves to leverage federal research dollars with industry's matching funds in order to expedite and conduct intermediate term generic research needed by all of the nuclear utility industry to continue safe, economic, and reliable operation of the Nation's nuclear plants.

Finally, over the last several years, our isotope program, has refocused the Federal role in promoting research, production and distribution of isotopes that benefit medical diagnosis and treatment. Our focused investments in the isotope program reflects this philosophy. Today, many of our former commercial isotope production activities have successfully transitioned to the private sector. Recognizing the important role that isotopes serve in medicine and their promise for the future, DOE proposed and Congress funded a new initiative this year—the Advanced Nuclear Medicine Initiative—to apply DOE's unique expertise and capabilities in isotopes to advance nuclear medicine technology. This program sponsors nuclear medical science by providing isotopes for research, supporting research, and funds fellowships, scholarships and internships to advance nuclear medicine in the U.S.

DOE'S NUCLEAR ENERGY RESEARCH ADVISORY COMMITTEE

Guiding the Future Direction of Nuclear R&D

To help guide this shift in our research and development and shape the future direction of nuclear energy research and development, in November 1998, Secretary Richardson established an independent advisory committee, the NERAC, under the chairmanship of Dr. James Duderstadt, former president of the University of Michigan. NERAC membership consists of experts in nuclear power plant operations, research, nuclear medicine, economics, environmental programs, nuclear physics and engineering who are from universities, national laboratories, and the private sector.

Currently, seven NERAC subcommittees are chartered on the following topics:

—developing a long-range R&D Plan with a 20-year horizon,

—developing a nuclear science and technology infrastructure roadmap,

—providing independent review of operating reactor R&D,

—providing independent review of accelerator transmutation of waste research,

—recommending future federal investments in isotope research and production,
—recommending focused research to increase proliferation resistance of fission systems, and
—recommending the future direction of university nuclear engineering and research reactors.

Let me point out just a few examples of NERAC's near-term activities.

Presently, a NERAC chartered subcommittee under the lead of Dr. John Ahearne, Sigmi Xi, is developing a Long Term Nuclear Energy Science and Technology Research Plan to guide nuclear energy research out to the year 2020. Another subcommittee, under the lead of Dr. Dale Klein, Vice Chancellor, University of Texas, is developing the nuclear science and technology infrastructure roadmap to evaluate the ability of our nation's R&D infrastructure to meet current and future R&D demands.

The R&D Plan will provide a critical input to the infrastructure roadmap, identifying the direction of nuclear energy research over the next 20 years. Other inputs come from the Office of Science, the new National Nuclear Security Administration, the Office of Environmental Management, Defense Programs and others. The infrastructure roadmap will identify any gaps in our ability to conduct the research required to support likely missions in the areas of nuclear energy, medical and industrial isotopes, NASA-led space exploration, general nuclear sciences, and defense needs. Both the long range R&D plan and the infrastructure roadmap are to be submitted to the full NERAC this spring.

This month, NERAC will sponsor a panel on the Technology Opportunities for Increasing Proliferation Resistance of Global Civilian Nuclear Power Systems. This panel, headed by Dr. John Taylor, Vice President Emeritus from the Electric Power Research Institute, will help us identify specific focus areas for further research into proliferation resistant systems and fuel cycles. The work of this panel will help us provide additional focus to future proliferation resistant research conducted under NERI and International-NERI.

FISCAL YEAR 2001 PROGRAM FOCUS

Accelerating Technology Innovation

Our research and development initiatives remain the cornerstone of the Department's nuclear energy, science and technology program. These initiatives are undertaken on the basis that nuclear science and technology will continue to provide important technological benefits and advancements for the Nation in the 21st century.

For over 50 years, the Department and its predecessors have been involved in development of reactor technologies. This past July, in recognition of the important role that the Idaho National Engineering and Environmental Laboratory and Argonne National Laboratory have served in the development of prototype reactor technologies, and on the occasion of their 50th anniversary, the Office of Nuclear Energy, Science and Technology designated these laboratories as Lead Laboratories for nuclear reactor technology. In this capacity, we will work with these lead laboratories to apply their world-class technical capabilities to help us maximize the value of the various reactor research activities conducted by the Department. Also, we expect to establish additional centers of excellence for various aspects of nuclear energy research at other laboratories across the complex.

The Nuclear Energy Research Initiative (NERI), program supports our nation's future ability to apply nuclear technology to our energy, environmental, and economic goals. NERI, started in fiscal year 1999, funds innovative investigator-initiated, peer reviewed research and development at universities, national laboratories, and industry to advance nuclear power technology; thus paving the way for expanded use of nuclear energy in the future and for rebuilding U.S. leadership in nuclear technology.

The goals of NERI are to develop revolutionary advanced concepts and scientific breakthroughs in nuclear fission and reactor technology to address: scientific and technical barriers to long-term use of nuclear energy; advance the state of nuclear technology to maintain a competitive position in overseas and future domestic markets; and promote and maintain the nuclear science and engineering infrastructure to meet future technical challenges.

NERI research focuses on proliferation-resistant reactor and fuel technologies, high performance/efficient reactor technology, advanced nuclear fuels, new technologies for the minimization and management of nuclear waste, and fundamental nuclear science. A peer review process is used to evaluate and select research projects having the highest scientific and technical merit and relevancy to program objectives. The program is managed to promote collaboration among U.S. research

institutions and information exchange with international organizations. Projects are conducted over a maximum of three years subject to annual appropriations.

In the first year of this program, funded at $19 million, the Department received over 300 NERI proposals in response to the solicitation. The proposals were each reviewed by more than 120 independent peer reviewers and in May 1999, the Department awarded funding to begin 46 research projects. These awards represented significant U.S. collaboration among universities, research laboratories and the private sector and significant international cooperation. By the end of fiscal year 1999, the appropriate contract mechanisms in place for the lead and collaborating organizations and this research is well underway today.

This year, with the $3.4 million increase in funding over fiscal year 1999 levels, we will continue funding the projects started in 1999 and award about seven new research projects. With limited funding for new projects, we are targeting research on the following areas: proliferation resistant reactors and fuel cycles, fundamental science, and Generation IV reactor technologies. Peer review of over 120 proposals submitted this year is now underway and we expect to award the new projects this spring.

By the end of the next fiscal year, the first three-year phase of NERI research will be complete. A process will be developed and implemented to evaluate these projects to identify the research that presents the most potential for future success and that should be consider for additional investment. With the $35 million proposed in fiscal year 2001, we will award about 20 new NERI projects, including as discussed below, projects conducted in cost-shared cooperation with international R&D organizations.

In fiscal year 2001, the Department proposes to launch a new initiative within NERI, the International Nuclear Energy Research Initiative (I–NERI) with $7 million for bilateral and multilateral research. This program would focus on advanced technologies for improving cost, safety, waste management and proliferation resistance of fission energy systems by leveraging our federal investment with investments made by the international research community. In addition to accelerating innovation and leveraging costs, I–NERI would provide the United States and the Department, a key seat at the table in international policy discussions on the future direction of nuclear energy.

I–NERI would allow us to leverage international resources through specific cost-share arrangements with each participating country, working with countries such as France, Japan, South Africa, and South Korea on a wide range of nuclear technology topics. This program, based on the recommendations of the June 1999 international PCAST report will feature a competitive, investigator-initiated, peer selection process directed by the Department with additional independent peer reviews using international experts from each of the participating countries.

The Nuclear Energy Plant Optimization (NEPO) program started in fiscal year 2000, to develop key technologies that can help assure the long term reliability and efficiency of our nation's existing nuclear power plants. As discussed above, this program recognizes the important asset that existing nuclear plants are in meeting demand for electricity during the first half of this century, with low environmental impacts. The program is conducted in cost-shared cooperation with the research arm of the electric power industry, the Electric Power Research Institute and in coordination with the U.S. Nuclear Regulatory Commission. The Department is requesting $5 million for this program in fiscal year 2001, the same level the Administration proposed and Congress appropriated in fiscal year 2000.

In fiscal year 2000, we will begin 15 high priority research projects, based on the critical R&D needs identified in the Joint DOE-Electric Power Research Institute Strategic R&D Plan to Optimize U.S. Nuclear Power Plants, and guided by a chartered subcommittee of the NERAC. This strategic R&D plan includes short term R&D that industry should be doing on its own and short to medium term R&D in which a federal investment is leveraged with industry to apply the unique infrastructure or expertise of DOE or to accelerate solutions of generic technical issues affecting existing nuclear power plants. These first 15 projects will address technical issues associated with a range of topics, including material fatigue, fuel performance, component inspections, in-service inspections and testing, stress corrosion, and digital instrumentation and control.

Some of the key projects include development of a technology for detection and characterization of defects in steam generator tubes, R&D on the mechanical behavior of irradiated structural steels, and an assessment of the natural aging effects on components. Although industry has made great strides, we believe that the NEPO program can accelerate innovation and provide intermediate-term research. As example, investigation into technologies for detection and characterization of defects in steam generators can have a profound effect on further reducing the poten-

tial for steam generator tube leaks such as recently experienced at the Indian Point 2 nuclear power plant in New York State.

NEPO is jointly managed by DOE and EPRI, with either EPRI or DOE taking the lead on individual projects and with clear assignment of management responsibility at the task or subproject level. Each project consists of a program plan to which universities, laboratories, and the private sector can use as a basis for submitting proposals for specific projects/tasks. Research funding will be awarded based on technical and scientific merit and cost. In fiscal year 2001, we will continue to address the technology issues as guided by the Joint Strategic R&D Plan and the NERAC.

In fiscal year 2000, Congress directed the Department to pursue research and development on an accelerator technology with potential to significantly reduce the radioactive toxicity and volume of civilian spent nuclear fuel while potentially producing electricity to help offset the life cycle costs of the program. Congress provided $9 million to the Office of Nuclear Energy, Science and Technology, under Civilian Research and Development to establish the Accelerator Transmutation of Waste (ATW) program.

The mission of the program is to conduct science-based research to derive system requirements, compare options, collect physics data, and address the major technical issues, and analyze programmatic and institutional issues associated with the deployment of an ATW system. The program will include leading edge scientific and engineering research in the areas of materials, high energy physics data, high powered accelerators, advance reactor coolants, and the unique areas of coupled subcritical reactors driven by accelerators. These new areas of nuclear science and engineering can open the door to advances in new reactor technologies and have the potential to enhance the proliferation resistance of nuclear power.

In fiscal year 2001, the Department has requested no new funds for ATW research. While the roadmap prepared in 1999 by DOE provides a good basis to begin the program planning process, the Department plans to apply funds provided for fiscal year 2000 to complete critical trade studies, evaluate experimental data, and complete its detailed program plan. Once this is done, the program will be equipped to suggest the next stage of research.

A chartered subcommittee of NERAC, headed by Dr. Burton Richter, Nobel Laureate and Professor of Physical Science at Stanford University, has been established to guide the Program Plan and provide recommendations on the research activities conducted this year and on future research. Once the plan is complete, it will be submitted to DOE management, the Office of Management and Budget, the Office of Science and Technology Policy, and interested Congressional committees.

Nuclear Science, Technology and Education Investments for the Future

Government, industry, and academia alike face similar challenges today as we seek to preserve the aging but highly developed science and technology infrastructure the United States has developed over the last fifty years. This infrastructure is vital to delivering current and future mission critical technologies and products to the nation. Similarly, preserving the human and research facility infrastructure at our universities and colleges remains key to preparing tomorrow's nuclear scientists and engineers, to ensure an adequate knowledge base to support innovation and technological advancement.

The University Reactor Fuel Assistance and Support program carries out the Department's commitment to maintain U.S. leadership in nuclear research and education. By supporting the operation and upgrade of university research reactors, providing fellowships and scholarships to outstanding students, and providing Nuclear Engineering Education Research grants, the program helps maintain domestic capabilities to conduct research, and address pressing environmental challenges. The program also helps to maintain the critical infrastructure necessary to attract, educate and train the next generation of scientists and engineers with expertise in nuclear energy technologies.

Our efforts to attract students to nuclear engineering careers continue to be a major focus of our program. Our scholarship and fellowship activity also pairs minority-serving institutions with nuclear engineering degree granting institutions to increase the number of minority students entering the field of nuclear engineering while simultaneously strengthening the infrastructure of nuclear engineering education. The Department is requesting $12 million for this program in fiscal year 2001, the same level that Congress appropriated in fiscal year 2000.

University research reactors in the U.S. form a vital component of the nuclear science and technology and education infrastructure in this country. These facilities are an important source of neutrons supporting research that is critical to national priorities such as health care, materials science, environmental protection, food irra-

diation, and energy technology. Currently, there are 29 operating research reactors at 27 campuses in 20 states. This year and proposed in fiscal year 2001, we will continue to supply fresh fuel to and transport spent fuel from university research reactors; fund reactor equipment upgrades; and continue the conversion of university reactor fuel cores from highly-enriched uranium to low-enriched uranium. Also, under the reactor sharing initiative, this year and proposed in fiscal year 2001, we will continue to pair 23 institutions with research reactors to those institutions without research reactors to increase their opportunities for training, education and research in nuclear science and technology.

In fiscal year 2000 and fiscal year 2001, the Department will provide 17 or more grants under the Matching Grants initiative to support education, training and innovative research at participating universities in 50–50 cost shared participation with industry. Beginning this year, we are increasing the funding to up to $60,000 to participating universities. We also expect to award up to 50 scholarships and 24 fellowships this year and next. Along with this, we have restructured our scholarship and fellowship program to increase minority student entries into nuclear engineering by linking students at minority serving institutions to nuclear engineering programs at universities with nuclear engineering departments. We propose to continue these efforts in fiscal year 2001.

The fiscal year 2001 request supports the Nuclear Engineering Education Research (NEER) program to stimulate innovative research at U.S. universities at a level of $5 million, the same level as appropriated this year. This investigator-initiated, peer reviewed research program is vital to attracting and retaining faculty and students in nuclear engineering programs. This year, with well over 100 proposals received from universities, we will award at least 6 new NEER grants, increasing the total research projects underway to 45. In fiscal year 2001, previously awarded R&D will continue and with the completion of research projects that started in fiscal year 1998, we expect to award up to 15 new NEER projects.

Finally, this fiscal year a NERAC-chartered Blue Ribbon Panel of experts from universities, government and laboratories, headed by Dr. Michael Corradini, Associate Dean of the College of Engineering at the University of Wisconsin, will evaluate the future of university research reactors and their relationship to the national laboratories in conducting nuclear engineering research. The recommendations of the panel expected this summer as well as other NERAC reviews related to university programs, will serve as a basis for recommending the future direction of these facilities, including recommendations for reactor upgrades.

The Advanced Radioisotope Power Systems program is our nation's only program for developing and building advanced nuclear power systems for deep space exploration and national security applications. The program supports and funds DOE activities related to development, demonstration, testing, and delivery of power systems to the National Aeronautics and Space Administration (NASA) and other Federal agencies. In fiscal year 2001, the Department is requesting $31.2 million for this program, which is the minimum amount required to sustain the basic capability.

Critical national security activities and NASA missions to explore deep space and the surfaces of planets could not occur without these systems. To date, DOE has provided over 40 radioisotope power systems for use on a total of 25 spacecraft. Previous NASA missions that have used DOE-built power systems include: the Apollo lunar scientific packages, Pioneer, Viking, Voyager, Galileo, Ulysses, Mars Pathfinder, and Cassini. As we consider the American enterprise in space in the first decades of this new century, it is clear that DOE's advanced power technology will be indispensable if we are to continue our exploration and advance human understanding of the universe. Projected future missions include the Europa Orbiter, Pluto/Kuiper Express, and Solar Probe missions planned for launch in fiscal year 2003, 2004, and 2007, respectively.

An expansion to the national security applications is also underway that will require delivery of several radioisotope power systems over the next decade. We are currently developing a new, more efficient thermoelectric generator for these national security applications and in fiscal year 2001, we will continue testing the thermoelectric element, proceed with design and initiate fabrication of an engineering unit of this new thermoelectric generator.

During fiscal year 2001, the emphasis will be on supporting NASA's Europa Orbiter and Pluto/Kuiper Express missions scheduled for launch in 2003 and 2004, respectively. The program had been pursuing the Alkali-Metal Thermal to Electric Conversion (AMTEC) technology for these missions but recently shifted focus on a Small Radioisotope Thermoelectric Generator since the AMTEC technology could not be ready to meet the projected launch dates. Consideration is also being given to a new, more efficient, Stirling engine conversion technology since it would require

less plutonium-238, the heat producing isotope that is used for all radioisotope power systems. Technology efforts may continue on the AMTEC technology for potential future missions but the major near term focus has shifted to the Small Radioisotope Thermoelectric Generator and Stirling technologies.

Our efforts will also proceed in support of providing already fabricated Radioisotope Heater Units for several NASA Mars Surveyor missions. The first mission is currently targeted for launch in 2001. This effort includes safety and environmental analysis to support both NASA's environmental documentation and the Department's preparation of Safety Analysis Reports required to seek launch approval.

The fiscal year 2001 request also includes funding to complete the scrap recovery line for plutonium-238 in Building TA–55 at the Los Alamos National Laboratory and to begin full scale operation of the process to recover several kilograms of plutonium-238. In addition, the request maintains the option to establish a domestic supply of the nonfissile plutonium-238 required to fuel these systems, includes a small effort on non-mission specific technologies for future applications, and provides for an assessment of special purpose fission technology, with particular emphasis on potential use in future space systems.

This assessment of special purpose fission technology will evaluate potential future requirements and the types of generic fission technologies that may be required. The focus of the assessment will be to establish what efforts should be undertaken and the timing for initiating these efforts if fission systems are to be ready to support the potential applications that are currently being considered. The Department, as the nuclear development agency for the Federal government, must take the lead in this evaluation; however, it will be done in cooperation with user agencies, who would have the major responsibility for funding, if these programs move forward into full development.

Finally, the advanced radioisotope power system program has been significantly streamlined over the last several years and we continue to seek opportunities for further savings. The overall funding of the program has decreased substantially, from $58.7 million in fiscal year 1995 to the requested level today of $31.2 for fiscal year 2001. These reductions reflect the several actions taken by the Department, including a decision to maintain and consolidate the operation of assembly and testing operations at the Mound Site and assuring that user agencies fund mission-specific costs. Presently, user agencies fund mission-specific development and hardware and DOE provides funding necessary to sustain the critical program and facility infrastructure.

The Isotope Support program exploits the Department's unique infrastructure that includes research reactors and particle accelerators to provide a reliable supply of stable and radioactive isotopes used in medicine, industry, and research. Continuing its emphasis on isotope-based research, the program continues the Advanced Nuclear Medicine Initiative, started this year at a level of $2.5 million, to apply the Department's unique expertise to advance the state of U.S. medical research, diagnosis, and treatment. We believe that advanced isotope-based therapies may hold the key to creating safe and efficient treatments for many types of cancer. The isotope program provides isotopes to researchers across the country and remains indispensable to conduct of advanced research in the United States where isotopes are needed. Finally, the Department continues its effort to exit commercial markets and to encourage new isotope production ventures by selling or leasing its facilities to the private sector, where possible. The Department's fiscal year 2001 request is for $17.2 million, reflecting a reduction in funding over last year's appropriated level of $20.4 and the nearly complete new beam spur at the Los Alamos Isotope Production Facility at the Los Alamos Neutron Science Center (LANSCE). The fiscal year 2001 program would also continue to serve its customers through the production and distribution of stable and radioactive isotopes necessary for medical, industrial, and research purposes.

The Advanced Nuclear Medicine Initiative, launched this year, sponsors nuclear medicine research for diagnosis and treatment of serious illnesses and diseases. This program is focused on using the Department's inventory of alpha particle-emitting isotopes to fight malignant diseases and to strengthen the nuclear medicine science and education infrastructure by providing scholarships and fellowships for nuclear medicine specialists. This summer, DOE will complete the peer review selection process for the first year of research projects, awarding grants on the basis of technical merit to individual and collaborating research organizations. We are very pleased with the response to this program, with over 40 organizations, representing private sector, teaching hospitals, universities, and research laboratories responding to the Department's solicitation for the first year of funding under this initiative, some of them submitting multiple proposals. Similar to our other peer reviewed R&D initiatives, ANMI projects will be awarded for up to three years, subject to an-

nual appropriations. With the $2.5 million requested in fiscal year 2001, we propose to continue the research projects and assistance to students provided this year as well as begin a few more in 2001.

The fiscal year 2001 request includes $0.5 million to complete construction of a building to house the Los Alamos Isotope Production Facility. When operational, the new 14.0 million isotope target irradiation facility will enable year-round production of vital, short-lived isotopes for medical research.

The request also includes $0.3 million to develop a private partnership that will replace the aged stable isotope production facility at Oak Ridge, Tennessee with a new, less costly production facility. Finally, the request includes $0.9 million to increase the supply of alpha-emitting isotopes to support the expansion of human clinical trials that are showing great promise for cancer therapy.

Modification of facilities at Los Alamos and Sandia National Laboratories for molybdenum-99 production were completed with fiscal year 1999 appropriations and no funds were requested for the activity in fiscal year 2000 and fiscal year 2001. At this point, production of molybdenum-99 can be mobilized on an emergency basis if foreign supply is significantly disrupted, and facilities will be ready for private sector investment to take the project to routine commercial production. This year, the Department will continue to pursue privatization of the production facilities for this vital medical isotope.

Finally, as you know, this program operates under a revolving fund as established by the fiscal year 1990 Energy and Water Development Appropriations Act (Public Law 101–101), maintaining its financial viability with Congressional appropriations and revenues from the sales of isotopes and services. The last few years' efforts to privatize production and distribution of commercially viable isotopes, though successful, has placed additional pressure on the program's working capital. Commercial revenues, which contribute to the infrastructure fixed costs, are no longer available and as a result, we are unable to invest in maintenance and upgrades needed for our infrastructure—an infrastructure which is vital to providing isotopes to our research customers.

Although we have taken steps to address infrastructure and facility issues to support nuclear medicine research, with the need for isotopes expected the increase significantly over the next 20 years, perhaps as much as 14 percent annually, the result is that we are more reliant today and tomorrow on federal appropriations. As such, we have asked the NERAC to examine the need for isotopes for medicine and research and to provide recommendations for the Department's long term research and production plan and for focused investment in the isotope production infrastructure. This plan, to be completed this Spring, will consider creative approaches such as public-private partnerships for new isotope production facilities to serve the longer term projected isotope needs.

Managing Federal Nuclear Facilities and Materials

The Office of Nuclear Energy, Science and Technology also is responsible for facilities and materials associated with current and past missions of the Office. In this capacity, NE serves as landlord at Argonne National Laboratory-West and the Idaho National Engineering and Environmental Laboratory's Test Reactor Area (TRA), both of which are located in Idaho; at two of the gaseous diffusion plant sites, located in Kentucky and Ohio; and is responsible for the maintenance of the FFTF in Hanford, Washington in a safe shutdown condition, pending a decision on its future. As part of our stewardship over these facilities, we are responsible for the management and disposition, where appropriate, of nuclear materials. For example, NE is responsible for the management of depleted uranium hexafluoride inventories stored at the gaseous diffusion plant sites, including the former K–25 site at Oak Ridge, Tennessee—the current East Tennessee Technology Park (ETTP).

The Fast Flux Test Facility (FFTF), located at the Hanford Site in Washington, is a Government-owned, 400 megawatt, sodium-cooled reactor that operated from 1982 to 1992, providing a materials testing facility for nuclear fusion and fission programs. It is the largest and most modern facility of its kind. In April 1992, the FFTF was placed on hot-standby because the Department anticipated that it had enough nuclear research reactors in operation or planned to meet its needs. However, the Department later terminated one new reactor project and shut down two existing research reactors. As a result, the Department launched a process to determine whether the Nation requires additional research reactor capacity and, if so, whether the FFTF should serve a role.

Pending the final decision on its future in fiscal year 2000, the facility is maintained in hot standby, defueled but with sodium coolant maintained at 400 degrees Fahrenheit and with continued surveillance and maintenance to ensure no degradation of key plant systems. The Department is proposing $44.0 million for FFTF in

fiscal year 2001 to maintain it in a safe, environmentally compliant condition and support the activities required to restart or permanently shutdown and deactivate the facility.

The Department is currently preparing the Nuclear Infrastructure Programmatic Environmental Impact Statement and other cost and nonproliferation analyses that will help inform a final decision on the future of FFTF during fiscal year 2001. The Programmatic EIS is assessing the impacts of operating FFTF, other DOE facilities or entirely new facilities. It considers the range of missions for which steady state neutron facilities are required, e.g., reactor research, isotope production, plutonium-238 production, and materials research. The Department is currently proposing to the Congress, a reprogramming request of $9.0 million to provide the additional funds necessary in fiscal year 2000 to maintain the facility in compliance with applicable Federal and State environment, safety and health requirements.

The activities of the Termination Costs program are focused on Experimental Breeder Reactor-II (EBR–II) shutdown and deactivation, treatment and disposition of EBR–II and Fermi reactor sodium coolant, and treatment of sodium-bonded spent nuclear fuel. The program also supports maintenance of the Argonne National Laboratory-West nuclear infrastructure, including maintaining a core capability to foster innovative nuclear reactor research and maintaining the safety, security, and safeguards infrastructure. We believe that the name of this program does not reflect the range of missions underway at Argonne National Laboratory-West. In fiscal year 2001, the Department is proposing $74.0 million for the Termination Cost program, near the level appropriated in fiscal year 2000.

The project to demonstrate electrometallurgical technology by treating 125 EBR–II spent fuel and blanket assemblies was completed in fiscal year 1999. During fiscal year 2000, the Department is evaluating the suitability of the electrometallurgical technology for full-scale treatment of the remaining EBR–II spent fuel assemblies through the preparation of an Environmental Impact Statement. DOE's decision on whether to deploy this technology for full-scale treatment of the remaining fuel will be made this year based on the EIS and the results from the National Research Council reviews requested by the Department. No further treatment of spent fuel assemblies will occur until a final decision is made.

Additionally, by the end of fiscal year 2001, the Department will complete draining of the EBR–II primary system and process 100 percent of all EBR–II sodium in compliance with Idaho National Engineering and Environmental Laboratory Treatment Plan. The schedule for this project has slipped by several months as technical difficulties were encountered with the process. As a result, the Department suspended operation of the sodium process facility while analyses and reviews were conducted. Those reviews are complete and we expect sodium processing operations to resume in May 2000 for process and product qualification operations. The Department has substantially increased its oversight of this project by assigning to the project, senior, highly experienced technical staff with proven experience in managing complex technical projects and by establishing a new, independent expert technical and project review organization to make ongoing recommendations to the Department on ways to assure the success of this project.

Next fiscal year, we propose to carry out the activities at Argonne in accordance with the Record of Decision on the treatment of sodium bonded fuel, complete processing of all stored Fermi and EBR–II sodium and continue deactivation and closure of EBR–II surplus facilities. We would also continue research that supports Nuclear Regulatory Commission approval of disposal of metal and ceramic waste forms from the demonstration project in a geologic repository, and continue repackaging and removal activities for spent nuclear fuel that remains from an earlier fuel burn-up development program now stored by a commercial entity.

The TRA Landlord program ensures reliable support for TRA activities such as naval reactor fuel and core component testing at the Advanced Test Reactor and supporting privatized production of isotopes for medicine and industry. The program also funds operations, maintenance and upgrade activities for site common facilities and utilities and ensures environmental compliance at the Test Reactor Area, including identification of legacy waste and mitigation in accordance with State regulations and DOE agreements with the State of Idaho. The Department is requesting $9.0 million for this program in fiscal year 2001, at about the same level as was requested and appropriated in fiscal year 2000.

The fiscal year 2001 request would allow TRA Landlord activities to continue at the same level the Administration proposed and Congress appropriated in fiscal year 2000. This fiscal year and next, we propose to continue with major modifications to the existing fire protection systems in this area of the Idaho National Engineering and Environmental Laboratory and to complete Title II design and begin the construction phase of the TRA Electric Utility Upgrade construction project.

Uranium Programs support activities related to the Department's former uranium enrichment program that were not transferred to the United States Enrichment Corporation (USEC Inc), including management of the Department's inventory of 700,000 metric tons of depleted uranium hexafluoride stored in Ohio, Kentucky, and Tennessee. USEC, privatized in July 1998, operates the Department's gaseous diffusion plants in Portsmouth, Ohio and Paducah, Kentucky under a lease arrangement.

At the gaseous diffusion plants, DOE is responsible for the maintenance of numerous facilities, maintenance of the grounds, clean-up of PCB spills in leased areas, electricity contracts, legal expenses, payment of the post-retirement life and medical costs for retired contractor personnel, and conducting a project to convert the Department's depleted uranium hexafluoride inventory to a more chemically stable form. The increase for Uranium Programs in fiscal year 2001 reflects $12.0 million to be appropriated from the Treasury Fund holding depleted uranium disposition funds from USEC Inc to support the depleted uranium hexafluoride conversion project.

As you know, this past August, health and safety concerns were raised at the Paducah gaseous diffusion plant site. Concerns centered around the presence of plutonium and other contaminants in recycled uranium historically processed at Paducah, inadequate progress in environmental cleanup, and other alleged health and safety problems. In response, the Department conducted a two-phase investigation to determine whether environment, safety and health programs put in place since 1990 provided adequate protection for workers and the public and to provide for a full investigation of past practices. The reports of these investigations were issued in October 1999 and February 2000, respectively.

In particular, the Phase I report identified potential criticality concerns related to storage of materials and equipment in certain DOE Material Storage Areas (DMSAs) that are the responsibility of the Office of Nuclear Energy, Science and Technology to resolve. DMSAs are areas containing spare parts, equipment and other items that were established during the transition and lease of enrichment facilities to the USEC, which DOE agreed to manage. DOE's investigation and subsequent review by the site contractor specifically identified 13 potential higher risk areas of concern requiring near term characterization and mitigation. Although not anticipated in the fiscal year 2000 budget appropriation, we are deferring other work to proceed more quickly with the resolution of the DMSA concerns.

This past year, we created a new office, the Office of Depleted Uranium Hexafluoride Management and increased program staffing to provide more focused support and oversight over landlord programs at the gaseous diffusion plant sites and the depleted uranium hexafluoride conversion program. The office has implemented a number of reforms that we believe will improve the effectiveness of our oversight of site operations, including the designation of staff dedicated to uranium hexafluoride conversion and conducting program reviews every four months with Oak Ridge, the site offices, and the Office of Environmental Management.

In fiscal year 2001, $53.4 million is requested to manage Uranium Programs activities, of which $29.5 million will be used to manage the inventory of depleted uranium hexafluoride: $16.6 million for cylinder storage maintenance; and $0.9 million for conversion development and $12.0 million for the depleted uranium conversion project.

Consistent with Public Law 105–204, the Department is proceeding with plans for a project to build and operate conversion facilities to convert the inventory of depleted uranium hexafluoride to a more stable form. In fiscal year 2001, the Department is requesting $12.0 million for the conversion project and later this year, will issue a Request for Proposals to the private sector to initiate design of conversion facilities. The Department plans to add an additional $12.0 million to this amount from funds obtained under Memoranda of Agreement with USEC Inc to further support this project.

However, because of the possibility that the depleted uranium hexafluoride inventory could be contaminated with transuranic materials from the years in which recycled uranium was used as feed stock to the gaseous diffusion plants, this year we have initiated an assessment of historical data and a cylinder sampling program to obtain a better understanding of whether there will be an impact to the design of the conversion facilities or to worker safety programs at these facilities. We hope to soon issue a schedule reflecting the change this development has on the procurement strategy for conversion plants. The Department remains committed to meeting the deadline established in Public Law 105–204 on constructing conversion facilities.

The remaining $23.9 million requested in fiscal year 2001 will be used to: support the maintenance of leased and non-leased facilities at DOE's former gaseous diffusion plant sites, clean up PCB spills in the leased areas, defend lawsuits, and pay the post-retirement life and medical costs of retired contractor personnel as well as

other pre-existing liabilities. The Department also remains responsible for safety documentation and assists the Nuclear Regulatory Commission in preparing reports for Congress.

PROGRAM DIRECTION

In fiscal year 2001, we are requesting $27.6 million for salaries, travel, support services and other administrative expenses for 171 headquarters and field personnel providing technical direction to Nuclear Energy Research and Development, uranium programs, isotope support, and other nuclear energy programs. A $2.9 million increase over the fiscal year 2000 appropriation, the fiscal year 2001 request includes additional funding for five technical positions at the Paducah and Portsmouth site offices. This increase is important to providing for adequate oversight over activities at the gaseous diffusion plant sites, including improved oversight of environment, safety and health programs at these sites and technical activities associated with depleted uranium hexafluoride conversion and evaluating transuranics and recycled uranium. Our Program Direction funding also supports the many intensive activities of the NERAC.

CONCLUSION

Mr. Chairman, this concludes my prepared statement. I will be happy to answer any questions. Over the last couple of years, I believe we have made great strides in the nuclear energy program. We have launched three new research initiatives, are proposing more focused international collaboration and leveraging of the federal investment, have successfully demonstrated a major technology for treatment of spent fuel, would continue our enduring role in support of space exploration, and would continue providing for safe stewardship of our federal nuclear facilities and materials.

As I said at the beginning of my testimony, we have a historic window of opportunity today to begin planning the next several decades of innovation. The decisions we collectively make today can significantly influence energy supply options and the environmental outcomes over the next fifty years. I look forward to working with you and the Subcommittee as we embark on preparing the technologies needed for this new century.

Senator DOMENICI. Senator Reid, would you like to either query or make some observations, whatever you like?

Senator REID. Mr. Chairman, I will be very, very brief. I am sorry I am late. I had a meeting at 9 o'clock that I had to attend.

With gas taxes as high as they are, I think we need to really take a look at alternate energy. And as we have been through the last three times we have brought our bill on the floor, we have had a lot of problems on the floor on that issue.

I have a letter here signed by approximately 60 Senators who feel we should provide more money in that program. So that is something we have to take a close look at. That is the reason these gentlemen are here, is to give us some expertise in doing that.

I have a full statement that I would like to make part of the record. And in that I did not get here on time, I will not read it, but ask that it be made part of the record.

Senator DOMENICI. It will be made part of the record.

[The statement follows:]

PREPARED STATEMENT OF SENATOR HARRY REID

Good Morning, Mr. Chairman. Thank you for scheduling this third—and, as it turns out, final—oversight hearing as we prepare to begin writing the fiscal year 2001 Energy and Water Appropriations bill.

Representatives of five important DOE programs have joined us this morning:

—Dan Reicher, the Assistant Secretary for Energy Efficiency and Renewable Energy

—Bill Magwood, the Director of the Office of Nuclear Energy, Science and Technology

—Dr. Ivan Itkin, the Director of the Office of Civilian Radioactive Waste Management

—Carolyn Huntoon, the Assistant Secretary of the Environmental Management; and

—Dr. James Decker, the Acting Director of the Office of Science

I would like to welcome all of you to this morning's hearing. I have read each of your statements and have a number of questions for all of you.

However, in the time available this morning, I want to focus my comments on only one or two of the topics before us, primarily Energy Efficiency and Renewable Energy.

With gas prices approaching $2 per gallon, now is the perfect time for Congress and the American people to re-engage in a conversation on the importance of renewable energy and energy efficiency technologies to our nation's future.

At best, Congress has moved in fits and starts over the years in its support for wind, solar, and geothermal power, biofuels, hydrogen, and other technologies that will allow us to lessen our ever-increasing dependence on imported oil.

We need to do a better job.

In recent years, many clean new energy technologies have emerged that are simply waiting for sufficient market incentives to enable widespread deployment. What is lacking is a clear, unambiguous stamp of approval from Congress for a range of policies, mechanisms, and funding to move forward.

Many of these technologies are tremendously promising. For example, in the area of solar energy, collector technology has now improved to the point where we could cover an area the size of the Nevada Test Site with solar collectors and generate enough power to take care of ALL of the nation's needs.

In fact, I think that covering the Test Site with solar collectors is a MUCH better use of this Subcommittee's dollars than some of the others we have talked about in recent years. The top of Yucca Mountain, in particular, is an exceptionally sunny spot.

On a more serious note, all of us on this Subcommittee know that the benefits of a stronger commitment to renewable energy are clear: 1. Enhanced national security due to reduced dependence on foreign sources of oil; 2. Enhanced security of energy supply; 3. Revitalized and stabilized agricultural economy; 4. New manufacturing and service jobs; increased export markets; 5. Cleaner air and water; and 6. More sustainable use of productive lands and forests.

However, for a variety of reasons, Congress has never been able to move forward in anything other than something of an ad hoc fashion. One of the big disadvantages of such an approach is that it inadvertently pits the various sectors against one another at a time when they really need to be rowing in the same direction.

This is no longer a question of wind versus solar or geothermal versus biomass. All of these technologies potentially have a role in our nation's future.

It is the role of the government to incubate these programs up to the point that they become viable and then kick them out of the nest and let the market dictate the path forward.

Even with relatively small appropriations in recent years, many renewable technologies have moved forward to the cusp of being competitive with traditional sources of energy. Wind energy, in particular, has enjoyed great success putting them on the verge of being pushed into the market and weaned off of federal funds. Not this year or next or the one after that, but very soon.

It takes time and money to develop mature energy sources. Our nation has invested over $50 billion in its pursuit of hydroelectric power; between $25 and $50 billion in its development of nuclear power. To date, the U.S. has spent less than $13 billion on ALL forms of renewables.

We need to do better.

We can do better.

And we are going to do better.

I have with me today a letter I received last week signed by 56 of our colleagues requesting that we provide full funding—$409 million—for the renewables program. I think that is a fine starting point.

Senator Domenici, you and I are scheduled to talk about several Subcommittee matters tomorrow and this will be one of them. You might want to consider bringing the Subcommittee's wallet with you!

Several other thoughts before I wrap up:

Interrelated thoughts for Assistant Secretary Huntoon and Dr. Itkin:

I am very concerned with reports of the inadequacy of the Nevada Test Site ground water monitoring program. It is my understanding that the peer review of the Frenchman Flat water flow model is being severely criticized.

I have in the past and will continue to support additional drilling at the NTS to determine whether contaminated ground water is moving at the Test Site.

Mr. Magwood, as you know I am interested in a continuation of funding for the Accelerator Transmutation Waste program. I realize that you have zeroed this program out in fiscal year 2001, but I hope you can give me an update on your thoughts in regards to this program.

We have a lot of witnesses today, so I will stop here. Thanks again to all of you for coming. I look forward to working with all of you as we put together next year's funding bill. Thank you.

BIOENERGY INITIATIVE

Senator DOMENICI. Do you have any questions?

Senator REID. Yes, I do have some questions.

Mr. Reicher, you have requested a significant increase for programs within your bioenergy initiative. Tell us about that. And what is the potential for biomass power and biomass ethanol in the future?

Mr. REICHER. Senator Reid, I think the potential is quite extraordinary. I think before you came in I said that today we get 3 percent of U.S. energy, U.S. primary energy, from biomass. And I think that we have the technologies today and under development that the goal that we have set to triple that by 2010 is quite realistic.

We now know how to make a ton of biomass into fuels that can power vehicles, into electricity, and into chemicals and precursors to chemicals that increasingly the chemical industry is interested in using.

So I think the opportunity is very, very large. What comes with it and what I think is so exciting to so many people on and off Capitol Hill is that we can do very good things for farmers and foresters, who obviously find themselves in a very tough situation right now economically; looking for new uses for what they grow, and looking for new uses for the wastes and residues that they leave behind.

So I think with the support that we have gotten in Senator Lugar's bill that the full Senate adopted at the end of February, with the President's goal of tripling biomass energy use, with the technological breakthroughs we have seen, with the new plants that are under construction, with the interest ranging from the chemical industry to the power industry to the ethanol industry, I think the future is very, very bright.

And what we strongly urge you to do is to strongly consider the funding request we have made so that we can move forward with this exciting opportunity.

Senator REID. If your program were not initiated—well, initiated is not the right word. If your program was not funded, what happens to this biomass?

Mr. REICHER. Well, I think the big thing that we lose is the following. Over the last year and a half, we have brought major companies together from the chemical industry, the power industry, the fuel industry. They have all agreed that if we are going to make radical progress in biomass, we have to take a more integrated approach.

We cannot have one company interested in making a liquid fuel, another company interested in making electricity, and a different company interested in making chemicals. This has all got to be integrated.

So the big thrust of our work and what this extra money would fund is to spur integrated approaches, so that a ton of biomass would go into what we are increasingly calling a bio-refinery, just like an oil refinery. And out of that would come not only liquid fuels, but electricity, chemicals or chemical precursors.

And we are moving to a day that we think we can accelerate with adequate funding where a ton of biomass can be a viable market competitor to a barrel of imported oil. We are moving towards that day. And that is a very exciting prospect for the economy, particularly in rural America.

REDUCING OIL IMPORTS THROUGH INCREASED BIOMASS

Senator REID. With oil prices in a state of flux, to say the least, right now, could biomass help alleviate this situation that we face? We are always talking about reducing the need for importing oil.

Mr. REICHER. Well, let me say, we are all familiar, of course, with corn ethanol. And that has been an important contributor to reducing our dependence on foreign oil. What is exciting is with these new technologies, we now know how to make ethanol out of just about every other kind of biomass. For example, the rest of the corn plant, the cob, the stalk, the leaves.

I think before you came in I mentioned there are new plants under way in New York State. They will be making ethanol out of municipal solid waste in Louisiana, out of waste from the sugar cane industry; in California out of waste from the rice industry that they no longer can burn in the fields under air pollution regulations; in North Carolina from the sweet potato industry; in the Dakotas apparently from sugar beets.

So what we have is an opportunity, if we can push this technology forward, to make a lot more ethanol out of both corn and a variety of other products to displace our dependence on oil.

ENERGY EFFICIENCY INVESTMENTS

Senator REID. We always focus on the fact that when the first energy crisis came in the early seventies, we were importing 40 to 45 percent of our oil. Now it is up to 55, 56 percent.

But the thing we do not talk about, if we had not developed ethanol and some other programs that are in use now, it would be even higher than 55, 56 percent, would it not be?

Mr. REICHER. If we had not developed those alternative sources and if we had not made the investments that we have made in energy efficiency, that level of dependence would be substantially higher. And equally or more important, our national energy bill would be substantially greater.

We estimate that the investments in efficiency over the last couple of decades have left our economy on an annual basis about $200 billion better off than it would have been had we not seen those energy efficiency improvements and the development of these clean power sources as well.

Senator REID. You indicated that just with biomass alone you could increase the amount of our total energy cost from 3 percent to three times that. So that would be 9 or 10 percent.

Mr. REICHER. Correct.

Senator REID. I wonder what that would translate into barrels. You know, we are always talking about importing barrels of oil. What does that translate to?

Mr. REICHER. Well, we are one-and-a-half billion gallons today. And we think we could be substantially above that, several billion gallons a day.

Senator REID. You indicated three times that, so that would be——

Mr. REICHER. In the range of—what gets confusing, Senator Reid, is that we can do a variety of——

Senator REID. Those notes get confusing.

Mr. REICHER. Yes. These get quite confusing. So I would throw them away. What gets very confusing is that biomass can be made into so many things. And tripling it, we might get some of that tripling by making liquid transportation fuels. We might get a part of that tripling by mixing it with coal and making electricity. We might get a part of that tripling by replacing the oil in the chemical industry, increasing it with biomass.

So we cannot tell you exactly today where the economy will take us in that tripling. All we know is that prices of biomass technologies are coming down. And we think that tripling U.S. primary energy use from about 3 percent to about 9 percent is quite realistic. And as I say, both the President's goal and Senator Lugar's bill provide strong support for moving forward with that.

GEOTHERMAL ENERGY

Senator REID. Earlier, within the past few months, I participated in the announcement of a new initiative by the Department of Energy called Geopowering the West. This initiative is to substantially increase the use of geothermal power in 19 western States. Talk to us a little bit about what your ideas are with geothermal power.

Mr. REICHER. Senator Reid, geothermal power today is seeing a very impressive price decline. We have brought the price down substantially since 1985. And we think through additional R&D we can bring it down further.

There is a vast geothermal resource in the western States, a really phenomenal resource, and not only for making electricity, but for also using it for heat, heat for buildings, heat for industrial activities. And together, we think that it is—we could provide 10 percent, our goal is 10 percent, of electricity in the western States from geothermal by 2020.

Today, California alone gets 6 percent of its electricity from geothermal. Nevada has an extraordinary resource. Many of the western States do. And what we want to do is give much greater familiarity to the 250 to 300 communities across the West that are located adjacent to a good geothermal resource.

We want to give them much greater experience than they have to date with this energy source. It is a clean source. It is an abundant source. And it is one that I think is worth the investment that we are seeking.

PROGRESS OF SOLAR ENERGY

Senator REID. Mr. Chairman, just one other question. Then I will ask permission to submit my others in writing.

Tell us a little bit about solar energy. Are we making any progress? I went to the plant a number of years ago down by Barstow. And that is 200 megawatts, which is the largest in the world. But their technology is very old. Are we doing any better than that?

Mr. REICHER. We are doing much better. We have come a long, long distance. I think in the briefing slides we were at $1 a kilowatt hour in 1980. Literally the only place we were using it was in space. And as a result of the work of the labs and industry, we literally brought this technology down from space. We are down to 20 cents a kilowatt hour. We think we can get in the range of 10 cents a kilowatt hour by 2005.

Senator REID. How does that compare to natural gas, for example?

Mr. REICHER. Natural gas is substantially cheaper. Combined cycle natural gas plant is between 2 and 3 cents. But the interesting thing about solar is, number one, from an export perspective, there are 2 billion people who are not connected to an electricity grid in the world, 2 billion. And their solar can often compete well or can beat almost any other energy source for bringing electricity to developing countries.

Within our own country, it brings a variety of environmental benefits. It is highly adaptable. I will just give you two—this is a roofing shingle. This is what would be an asphalt shingle. But actually the solar material is built right into the shingle. And instead of putting an asphalt roof on, you put this solar roof on. You have to put a roof on your house anyway. Wire it up, and you are making electricity.

We are now getting to a point—and I think beginning next year we are going to see this—where glass—and this is relatively translucent. But literally transparent glass going into buildings will have a multi-fine layer of the photovoltaic material laid down on it. And so literally windows in buildings will be producing electricity. And it is an exploding market all over the world.

And as I said, I think before you came in, the unfortunate fact is that we have lost our number one market share to the Japanese in the last year.

SOLAR ENERGY IN REMOTE LOCATIONS

Senator REID. Mr. Chairman, I traveled earlier this year to Nepal, and 84 percent of the people in Nepal have no electricity. I got a letter yesterday from a Peace Corpsman there who sent a number of pictures and explained what he was doing. I asked him to do that.

One of the pictures showed out in this remote part of Nepal a roof with a solar panel on it. And it is the first electricity they have ever had. And they are able to, with that solar panel—and the sun does not shine a lot there. They are able to have light in their houses, basically what it is for. And the panel was very small.

Mr. REICHER. Yes. It is a highly adaptable technology. And as I say, the near term opportunity and the growth has been some 20 to 25 percent a year for the last many years, the opportunity is in developing countries. And we have some very strong U.S. companies that can sell abroad and are making money.

Senator REID. Explain to us, Japan has surpassed us in what?

Mr. REICHER. In world market share, just this past year. Their government support is about three times what it is in the United States. And they have, frankly, a stronger domestic deployment program than we do in the United States, although I think we are doing a good job. But they have a much stronger one there.

Senator REID. Thank you, Mr. Chairman.

Senator DOMENICI. Thank you, Senator.

Senator, you are next.

Senator CRAIG. Thank you very much, Mr. Chairman, Dr. Decker, Mr. Reicher and Mr. Magwood. Thank you.

Let me make a couple of observations first, because I know this administration right now is scrambling to try to publicly display an energy policy that frankly I think has been lacking. And I have been speaking out about that, as has other Senators. And I spent years with this type of budgeting that reflects an anti-nuclear and an anti-fossil fuel bias which has clearly emerged.

And to spend the last good number of minutes talking about new emerging technologies, Mr. Reicher, is something that I will vote for, because I do not believe we ought to demonstrate narrow bias that shove large portions of our energy base out of the marketplace. I think we ought to work on a full basket. And clearly solar, photovoltaic and wind are a part of the total.

WIND ENERGY PRODUCTION ON PUBLIC LANDS

But when I look at your map on page three, I see an emerging problem. I see Idaho, Montana, Wyoming, Colorado and New Mexico as major wind-producing States potentially. The problem with that is that those are all public land States. And most of those areas that show that excellent opportunity is public land.

Right now the bias in this country will not allow energy development on public land, will not allow drilling, will not allow coal mining. Why would it allow the slopes of the Rocky Mountains to be covered with windmills?

Mr. REICHER. Senator, that is an excellent question. I do not know the total details of this, but I can tell you in a general way that when this ranking was put together, it took a count of a variety of constraints on land use.

Senator CRAIG. But I bet it did not take account of environmental impact statements, the NEPA process and the public bias that wants to leave those vistas open and beautiful.

Mr. REICHER. I actually think that it took into account areas where, for a variety of restrictions placed by Federal, State and local governments, you could not. But there is a more important point, Senator. And that is that what we have found is that these generally go well and are highly accepted in agricultural areas.

Senator CRAIG. But those are private lands.

Mr. REICHER. Private lands.

Senator CRAIG. That is right.

Mr. REICHER. And farmers——

Senator CRAIG. The areas that you are saying here, most of these States are 60, 70, 80 percent public lands.

WIND ENERGY ON PRIVATE LAND

Mr. REICHER. I understand that. But we do not need a huge land area for the kind of development we are talking about. And what we have found is that farmers, because they can plant their crops and graze their animals literally up to the base of these energy technologies and get paid for the use of their land, they love this technology.

Senator CRAIG. Well, I do not dispute that. I totally agree with you. And I think in North Dakota and other places like that that are more private land, I agree. But what you are talking about is something that is well known. That is basically the wind tunnel of the Rocky Mountains that rolls down out of Canada, that generates that pattern that is demonstrated on your map. Any of us who understand the geography of the West understand that.

Those are—that is public land. And I have been around wind farms. They are big. They are very visible. And they are loud. They make a whopping sound that I do not think the public out west is going to like very well when they are out recreating on these mountain slopes.

Mr. REICHER. If I could——

Senator CRAIG. Please do.

Mr. REICHER. Actually, the modern turbines, the new turbines, developed in the last few years are quite quiet. They are——

Senator CRAIG. They do not stand up on a large promontory and have large blades?

Mr. REICHER. Oh, they are large.

Senator CRAIG. Yes.

Mr. REICHER. They have large blades. They are quite tall. But they are relatively quiet compared to the old versions that you might have see in California, for example, where the major development——

Senator CRAIG. Well, I only bring that because my guess is that if you expect that explosion of development other than on private property, we are going to have to change our attitudes as a public.

Mr. REICHER. Actually, I do have a note here from someone with me that the studies did take into account NEPA, public lands, et cetera, for wind. So we were quite conservative in the analysis of this.

GEOTHERMAL

Senator CRAIG. Good. The same is also true of your geothermal development. I know the Senator from Nevada has just expressed that. I watched a flurry of geothermal excitement in the 1970's, after the last energy spike. And they came to my State of Idaho. They drilled in a variety of places. And the result was relatively disappointing because of the high temperatures needed at that time.

Now I know technology is bringing down the overall temperature requirement some, and that is valuable. Once again, the problem is that the great geothermal basic of Idaho is tied to Yellowstone.

And there is a tremendous fear that we might deplete the geothermal energies that are tied to Old Faithful.

If you look at that pocket on your map on page 7 in northeastern Idaho and into Wyoming, that is the geothermal basin of Yellowstone Park. I do not think there will be any drilling there, because it was disallowed at the time with a great fluffy of concern, and legitimately so. And I did not criticize it.

I think what I am trying to suggest to you is that the public in whatever fashion is going to have to accept some degree of tolerance to allow any kind of energy development, especially when you target large public land States of the West. Less true of biomass and all of that. Although on public lands in the West, collection of biomass, if we are not allowed to enter those lands and do stewardship programs to reduce the bio-loading and therefore make that stuff available, which we are not being allowed to do today, largely because of biased inter-public lands. Those are all going to be factors.

HYDROPOWER

But certainly on private properties and in the West, those are going to be extremely valuable. The reason I point those out, I am going to vote for this budget. But I am going to vote to put more into nuclear. I am going to vote to put more into hydro. And the question I would like to ask of you, Mr. Reicher, the advanced turbine research and development program requested for fiscal year 2001 is $5 million. The budget justification for 2001 States that the plan is to complete laboratory biological studies of the effect of turbulence on turbine-passed fish.

Now the reason this is important, Mr. Chairman, we are engaged in a major controversy in the Snake-Columbia River system that is probably one of the greatest hydro-networks of the western world. There is a discussion of the removal of four dams with a generating capacity of 1,000 megawatts, a peaking capacity of 3,000, a huge abundance. And that is at a time that, within a year, Bonneville Power is going to be reporting a deficit of energy supply in the region. And yet this administration, some in the administration, have been very active advocates in the removal of those dams.

I, quite the opposite. In fact, one of the areas of research here is to make the turbines less damaging to fish, more fish friendly. And that research is applicable all over the world and most certainly in that area.

FISH FRIENDLY TURBINES

So I guess my question to you is: Could you explain why there is no funding being requested for the pilot scale proof of concept testing of the conceptual design to verify biological criteria and the predicted biological performance using live fish? That is the next step that we have to get to. That is, if we do not have an anti-hydro bias, and we want to improve the fish-friendly character of our hydro systems.

Mr. REICHER. Senator Craig, first of all, it is an important energy resource. It is an area of R&D that we are committed to. And I brought an example of what this work involves, which is literally testing the impacts of various turbine designs with respect to both

the actual mechanical impacts that a turbine can have on fish and the impacts on the dissolved oxygen at the base of a turbine.

We literally have what somebody joked as sort of like a crash dummy fish. These are wired electrically, and we can do all sorts of important experiments looking at these designs.

So we are very, very supportive of making these dams, these turbines, as people say, more fish friendly. We do think it is critical to what I think a number of dams are facing or will face in terms of relicensing over the next several years.

And so that $5 million is designed to in fact move this whole opportunity forward to put new turbine designs into greater use, particularly as dams face relicensing.

Senator CRAIG. But there is no money requested for the pilot scale——

Mr. REICHER. I did not understand that question. And I am told that in fact——

Senator CRAIG. We could not find it, at least. If it is in there, could you identify it for us?

Mr. REICHER. Yes. We will identify that. And we will be quite specific about what that money is for, because I thought that was what the next step involved.

[The information follows:]

PILOT-SCALE FISH FRIENDLY TURBINE

The Department of Energy is committed to the goal of developing hydropower technology which will reduce turbine-induced fish mortality to 2 percent or less. No fiscal year 2001 funding was requested for the proof-of-concept, pilot-scale, test of the fish-friendly turbine design developed by the Alden Research Laboratory, since fiscal year 2000 funding was considered sufficient to cover this activity and allow it to continue through fiscal year 2001. In addition, fiscal year 2001 funding is requested for biological research, including sensor fish refinement, to gain the necessary understanding of stresses and behavior of fish in the turbine environment. The DOE program will also explore other fish-friendly designs by providing funding support for biological testing of turbines provided by industry.

Senator CRAIG. It is. We are really going to reach forward and make—we have already done some retrofitting. I think we did it at Bonneville in the Lower Columbia, and we are moving up the system. But what is most important is that we advance this design so it is applicable, both in large and small scale, for all of our hydro systems around the country.

Mr. REICHER. Absolutely.

SODIUM BONDED SPENT NUCLEAR FUEL

Senator CRAIG. Mr. Magwood, would the environmental impact statement for treatment and management of sodium bonded spent nuclear fuel scheduled to be completed in December 1999, why has the final environmental impact statement not be finalized? And when do you expect the record of decision to be issued?

Mr. MAGWOOD. Yes, that is true, Senator. We have been delayed in getting that out. There are two primary reasons for that. I think the most important reason is that we have been waiting for completion of a study by the National Research Council on the viability of the electrometallurgical treatment technology demonstration project and the use of this technology for treating DOE sodium bonded fuel.

And if you have ever worked with the National Research Council, they are not always the most time-efficient organization, but they do come out with good answers. I am pleased to tell you that I met with them last week and their final report is now complete. And I have been informed that they have a very favorable view of the use of electrometallurgical technology for the use of treatment of our sodium bonded fuels.

So we are currently completing the environmental impact statement, and I expect that we will issue the final EIS in the next 3 or 4 weeks, and 30-days later the Record of Decision. So I think that in May or so, we will see the Record of Decision.

Senator CRAIG. Well, thank you. I think that is obviously necessary and important.

Mr. Chairman, I have other questions. Let me ask just one last one, and then we will go another round, if you feel it necessary.

Senator DOMENICI. Sure.

NUCLEAR REACTOR TECHNOLOGY

Senator CRAIG. To help maximize the benefit of its nuclear energy research programs and facilities, DOE has selected Argonne National Laboratories and the Idaho National Engineering and Environmental Laboratory to serve as its lead laboratories for nuclear reactor technology.

The lead laboratory's charter calls for Argonne and the INEEL to continually evaluate and integrate the results of research and consider the need for follow-on research development and demonstration programs, as required to meet the Department's long-term goals and serve as a technical resource to provide support for the DOE and decision making or R&D efforts.

Mr. Magwood, would you please comment on the DOE's nuclear power programs?

Mr. MAGWOOD. Yes, I would be happy to. We have established a lead laboratory relationship with Argonne and INEEL in Idaho. And it has proven to be very, very helpful in dealing with nuclear reactor technology issues. For example, our efforts to develop Generation IV nuclear power systems has been facilitated in large part by the lead laboratories.

The meetings that we have been having with the international community have been hosted by those laboratories. The Idaho National Engineering Laboratory in particular has been instrumental in pulling together a large workshop that we are holding in May that will include about 100 experts from across the world to talk about next generation nuclear power technologies.

They also have been helpful in working with the other laboratories that have nuclear expertise, integrating an overall picture on nuclear technology. Obviously, we are to a certain extent resource constrained, so we have not been able to push that relationship as far as we would like.

But I am very hopeful that in the future we will be able to devote more resources to those laboratories to establish the kind of pool of experts that are constantly available to us to support future nuclear power needs in the United States.

Senator CRAIG. Thank you very much, Mr. Chairman. I will come back in the second round. Thank you.

NUCLEAR ENERGY

Senator DOMENICI. Senator, let me just say I personally am very proud of the fact that within the Department of Energy they are doing some nuclear work now. Two years ago, they were doing none—2 years ago, you would assume that nuclear energy did not belong in an energy department of the greatest nation on earth. And we are doing some exciting things, little by little. And Mr. Magwood has taken a real positive approach with small amounts of money.

It is quite obvious that we have a long way to go, but we are catching up very, very fast in terms of these other countries that have taken our technology and are moving ahead. The Nuclear Regulatory Commission has become much more realistic in terms of the way they are regulating the industry. It is with great success. But it would appear that it is not with the idea of making it difficult, making it prolonged beyond reason.

And I very much appreciate your interest, because, frankly, the world is going to find a new reactor that is safe, and there will be no way for anybody to worry about it. And we will put that in the mix in the United States, also, sometime in the future, I believe.

Senator CRAIG. Well, Mr. Chairman, it is appropriate that you say that. And I must say the leadership for that turnaround has come largely from this committee and from your effort and those of us who are involved and interested. Because when I look at the scheme of things and I look at our desire to have clean air in this country, and we should——

Senator DOMENICI. Exactly.

Senator CRAIG [continuing]. I am not quite sure how we get there without at least the nuclear component and the hydro component sustaining a percentage of the share of the total. I do not think we get there. And yet we are wanting it as a country, and we deserve it with our capabilities and our technologies.

So we will push in that area. And if we have to, we will lead. Thank you.

Senator DOMENICI. Well, I want to also make an observation, because I do not have time today. Mr. Reicher, having complimented you, I continue that compliment in terms of managing your office. It is very diverse and very difficult.

But I do not have time today to engage in a series of questions with you whereby we would establish some of the limitations that are real with reference to solar energy and the other energies that you have described today.

PROS AND CONS OF RENEWABLE ENERGY

There are others who have looked at it and say yes, it should be pursued, but we ought to be realistic as to what it can accomplish. And we also ought to be realistic as to what pollution it will ultimately cause, if you use conventional solar apparatus and wind apparatus, and you really think you are going to add substantially to the national need, that there will be a huge amount of apparatus left over that assume gigantic status in terms of ground pollution.

So I am going to try, in which event I will notify you, I am going to try to bring a witness from that side of the equation, that would

come before the committee and say, you know, you are not going to touch the dependence on crude oil very much for the next 15 years, or tell us out of all of these which one has the best chance of doing something significant.

I do not want anyone to think I am against these technologies. I cannot find enough money for all the solar energy requests and the others in the budget, in the appropriations. We might this year. We will try. But, frankly, I look at it from the standpoint of our growing dependence on oil.

And I just do not see in the foreseeable future a very major reduction in crude oil dependence in the United States. I see more in conservation probably than any other thing we have addressed here today. That is real. We could do tremendously better, if we set about to do it. But I am not sure that the other technologies that have been spoken about here today are really going to make a very big dent.

But I need somebody who knows more than I know, knows as much as you know, but knows it from a different slant. I need to have them come before the committee and tell us about it.

And like I say, I will be fair. I will prompt you and tell you that we have that person. And if you want to come up, maybe you would come up with them. In any event, we are going to hear from somebody on the other side of this.

Now having said that, let us——

Senator REID. Mr. Chairman, just one brief comment.

Senator DOMENICI. Sure.

Senator REID. And also, I think in fairness we need somebody to give us the other side of the nuclear——

Senator DOMENICI. Sure. Whatever you would like.

Senator REID. I do not know what that is, but——

Senator DOMENICI. We are not planning to build a new nuclear reactor, from what I can see, for a long time. So right now we are still stuck with what we have.

Senator REID. I have supported you in your efforts to develop transmutation and other programs like that. I think it is important we understand the full program.

Mr. REICHER. And, Mr. Chairman, if I could just for one second?

Senator DOMENICI. Sure.

RENEWABLE ENERGY SOURCES

Mr. REICHER. I also urge you to take a look at what some of the oil companies themselves, in terms of their own projections, are considering with respect to the role over time that various technologies are going to play in our energy mix. And it is very illuminating.

You will see, for example, a variety of these oil companies take the opportunities with biomass very seriously, very seriously, and there are projections of——

Senator DOMENICI. Right.

Mr. REICHER. And hydrogen in a very fundamental way.

Senator DOMENICI. Well, I heard that today. And we certainly are going to be asking questions about that. That is an exciting thing. If in fact we have it moving in that direction, we may get

more biomass, also, than I have perceiving looking at what others predict.

You may be more right on biomass. It may very well be a new combine is taking place in terms of generating the interest.

Mr. REICHER. And with respect to solar, the breakthrough for the solar electric will be when we succeed, as we are moving towards actually building it into building materials, literally the materials that we build our houses and buildings and making them self-generating. We are moving in that direction, and it is very exciting to have a technology that literally will be part and parcel of the structures in our cities and other areas.

Senator DOMENICI. Let me ask Senator McConnell, how long can you stay?

Senator MCCONNELL. Well, I have several things——

Senator DOMENICI. I am going to have to leave shortly. And I had a few questions of this panel. Did you have questions of this panel?

Senator MCCONNELL. Yes, of Mr. Magwood.

Senator DOMENICI. And then we have another panel of two. Would any of you be able to stay and call those people?

Senator CRAIG. I think I can stay for a little while longer.

NANOTECHNOLOGY

Senator DOMENICI. All right. I just have a couple of quick questions. Dr. Decker, first, I understand you really had to go out of your way personally to be here today. You had something much more pleasant planned for your life. And you were entitled to that. And I very much appreciate your coming.

The notion of nano science, which the President is now bantering around, and so people are beginning to take this technology and listen to it and look at it, it is obviously some of the most exciting science work that we have ever seen. I had occasion to see a little piece of nano science at Sandia National Laboratories, where they were talking about micro-engines and the production of little, tiny engines on a chip, like a computer chip. And they actually ran. Little engines run and produce power and do things, although mighty small.

As a matter of fact, I was very privileged to have been in the presence of a young engineer who got the national award for engineer of the year for being the design engineer of a micro-engine on a computer chip. And I thought—I never thought engineers would recognize that that is engineering. I thought engineering is engineering.

It is not making micro-engines that are as small as a strand of hair and putting thousands of them on a chip. And thinking that you might put them in the bloodstream some day and they will attack what you ask them to attack, perhaps the stuff that accumulates around the human heart. There are all kinds of uses.

The President is asking for a lot of nano money spread out across six different agencies and departments. I would just like to ask you, could we be confident here that the national laboratories, who do a lot of work and those that are involved in nuclear weaponry, need nano science all the time. Theirs is the business of miniaturization. Will they be part of this effort, as you see it?

Dr. DECKER. Yes, Mr. Chairman, they certainly will. We have, I think, enormous capabilities within the national laboratories in the whole area of materials. In fact, the Department is, I believe, the leading supporter of material science.

We have a terrific investment in facilities that are going to be incredibly important in characterizing and understanding science and technology at this scale. Our synchrotron light sources, our neutron sources, our electron micro characterization facilities, all will be incredibly important, I think, in carrying out this initiative.

SPALLATION NEUTRON SOURCE

Senator DOMENICI. You have requested $262 million for the Spallation Neutron Source at Oak Ridge. It had a little bit of a delay because of an overrun and a little bit of confusion with reference to management of the project. I assume we are on all four burners, moving right ahead now. Is everything in order?

Dr. DECKER. Yes, Mr. Chairman. I am pleased to say that it is. We just had a very significant review of that project. And the review team concluded that in fact the project is on—can be built on cost and schedule. But we did do some significant restructuring, as you indicated, on the management of that project over the last year. We have an excellent management team in place now, and I think they are doing an outstanding job.

Senator DOMENICI. Are there any technical, engineering, management or scientific issues that remain that could impact on the successful completion of this project?

Dr. DECKER. I think any time you build a facility like this, which is pushing the state-of-the-art, you always have some unknowns with regard to incorporating technology. But we believe that the risks, any risks that we have, are quite manageable. And we are quite comfortable that there will not be any technical show stoppers at this point.

Senator DOMENICI. I just got that question on the record, fellow Senators, because we do not have a great record within the Department of Energy of building major kind of facilities and getting them done on time, or even getting them done. That is not complaining about anyone. It is just a statement of fact. And this is not one of the giant projects, but it is a pretty good sized one.

Dr. DECKER. It is.

Senator DOMENICI. And I would very much not like to see this one go the way a number of them have. So we are going to follow it very carefully. And when we ask you these questions, we are very serious about your telling us on the record, so we do not have something new occur later.

Dr. DECKER. Yes, sir.

Senator DOMENICI. Thank you for your dedicated effort. You have put some really good people together.

I yield now to Senator McConnell.

Senator MCCONNELL. Thank you, Mr. Chairman.

CYLINDER CONVERSION

Mr. Magwood, when I drafted the cylinder conversion bill which is now Public Law 105–204, it established a time table that would give the Department more than enough time to implement this leg-

islation. Unfortunately, my lowest expectations for the Department have been exceeded.

I am very skeptical that the budget offered by the Secretary is sufficient to keep this project on track and able to meet the time table that you have set forth. In fact, it is my understanding that this budget only provides enough funding for your office to complete one-third of the total design work for the facilities.

Based on information from project experts, as well as information from your office, at least $60 million is needed to keep the project on track.

Further, I am disappointed the Secretary offered only $12 million of the available $24 million he had committed to provide last year.

So I have several questions in that regard. Has the Secretary withdrawn his commitment on this project, Mr. Magwood?

Mr. MAGWOOD. No, Senator. I have spoken with the Secretary about this, and he is insisting that we proceed along with this project as efficiently as we can. I have also worked very closely with the Deputy Secretary, and he has spent a great deal of time with me personally discussing this, and how to keep it on track.

There are obviously significant funding limitations, but I think that given where we are in the project, the need to do some sampling of the cylinders—I think you are very familiar with the issue that we have run into, where we are concerned about the possibility that there are transuranic materials in the depleted uranium that could affect the design of the facilities down the road.

Given where we are, I think the amount of money we have asked for is just about right.

Senator MCCONNELL. What about the remaining $12 million in funding that has not been obligated?

Mr. MAGWOOD. Well, let me explain. We expect to issue an RFP in October. If we keep to that schedule, and I expect that we will, we will be able to award a contract probably around this time next year.

Because of the fact that this will only leave a small amount of time left in the fiscal year to do work, we think that the $12 million we have asked for in appropriations and the $12 million we have matched it with—the available USEC monies—is sufficient to get through the rest of that fiscal year.

What that means is that the $60 million you spoke of will probably be needed up in the 2002 budget or the balance will be needed in the 2002 budget to complete the design work.

So it has not reduced the need. It has simply pushed it off into the future a bit. But we are still on track. We are obviously behind schedule because of the transuranic issue, but I believe we are on track and moving along as best as possible.

SALE OF LOW ENRICHED URANIUM

Senator MCCONNELL. Last year, the Secretary promised to commit the revenue from the sale of low enriched uranium held by the Department to fund the conversion of 57,000 cylinders of depleted uranium stored at Paducah, Portsmouth, and Oak Ridge.

The President's budget assumes that the sale will raise $21 million in fiscal year 2001. Yet, as we have said, only $12 million is budgeted for the conversion program.

How do you explain this? Is this a budget sleight of hand or what? How would you explain that?

Mr. MAGWOOD. I did not answer the first part of your last question—or the second part of your last question.

The $12 million that you spoke of, the rest of the $24 million, is still available and can still be devoted to the project. We still plan to put that in the project in the future years. So it is not that we have used it elsewhere. We simply are deferring its use for now.

The money that we expect to collect from the sale of LEU, my understanding—and I have talked with our CFO about this—is that we did provide some language to different members to try to get that into the budget so we could use it for this project.

And for whatever reason—I am not as familiar with this as the CFO is—that did not happen. And I do not know what the plan is to go forward. So, I am not, perhaps, the best person to address that aspect of it.

But we do expect to apply all of the available USEC funding to this project. And we have been working very closely with the staffs of the Kentucky and Ohio delegations as we try to apply those monies.

TRANSURANIC CONTAMINATION

Senator MCCONNELL. Well, going back to the transuranic waste that you mentioned, you informed my staff in a meeting last month that this waste was found in depleted uranium cylinders generated in 1988 and 1993.

If the Atomic Energy Commission stopped using recycled uranium during the mid-1970s, how do you explain the fact that this material is found in these cylinders 10 to 15 years later?

Mr. MAGWOOD. I am not being facetious, but that is a really good question. We have been trying to figure that out. It is something that was a surprise to my office.

We suspect that it may have come from the foreign research reactor field, but we are not really certain of that. It is an ongoing investigation to try to understand why that is there.

As you indicated, we know that in the late 1950's to 1960's and late 1960's to early 1970's, the Department recycled uranium. Why material would show up 15 years later is something that we are still investigating.

GASEOUS DIFFUSION PLANTS WORKER LAYOFFS

Senator MCCONNELL. You are probably aware that USEC is preparing to lay off 825 workers at the gaseous diffusion plants. It is my understanding that your office has control over $10 million in funds that have been obligated to cylinder maintenance between fiscal year 2002 and fiscal year 2010. The level of funding would be more sufficient—this level of funding would be more than sufficient to provide these basic benefits.

Is there any reason why this funding cannot be used immediately to provide a voluntary reduction in force benefits package? And what about worker health testing or accelerating cleanup?

Mr. MAGWOOD. I have not heard that idea come up. It is certainly something that, I am sure, if you would like to make a rec-

ommendation, we would certainly take it back to the Secretary and discuss it.

It simply has not come up, and I do not know if there is a technical reason why some of the monies could not be diverted. Clearly, if we do not spend money on cylinder maintenance, we do have the risk that some of the cylinders could corrode. We could have a leak. But as you know, we do not think that that is the situation now.

There is a possibility that we could take after reductions and use that money elsewhere. But it is something we would have to look into very, very thoroughly before doing so. We would certainly be willing to take that recommendation back if you want to state that formally.

CYLINDER MANAGEMENT PROGRAM

Senator MCCONNELL. Yes. Why do you not do that?

I have a budget document that was prepared by your cleanup contractor that states that at the end of fiscal year 2001, the cylinder management program will have an uncosted balance of $9.2 million between Paducah and Portsmouth.

How do you explain this? And why are you requesting such a massive increase, if the contractor will not be able to spend this amount of funding?

Mr. MAGWOOD. I do not believe that is correct. From what I understand, we actually have less money available right now than we need to complete the work that has been assigned to the contractors.

So I would have to understand more about where that number comes from before I can really respond to that.

[The information follows:]

CYLINDER MANAGEMENT

It is my understanding that as part of the budget formulation process for the uranium programs' fiscal year 2001 budget request, various funding scenarios were developed for allocation of funding among Paducah, Portsmouth, and the East Tennessee Technology Park by the management and integration contractor. Although the Office of Nuclear Energy, Science and Technology is not familiar with the budget document cited in this question, we are familiar with a scenario that maximized cylinder maintenance at Paducah and Portsmouth, and resulted in a somewhat lower uncosted balance. However, neither scenario is considered credible because of other program mandates that were not considered in the scenarios. As we proceed through the fiscal year 2001 appropriations process, the Department will continue to analyze options for allocation of limited funding to meet the numerous priorities of the program at the three sites. Regardless, we do not envision the allocation of the funding among the sites to result in a high uncosted balance in fiscal year 2001.

Senator MCCONNELL. Would it not be better to just go on and spend the money on cylinder conversion to eliminate the threat, than to continue to maintain?

Mr. MAGWOOD. My view, Senator, is that you need a balance. It is going to take us 25 or 30 years to treat all of the depleted uranium. If we were not to keep a cylinder maintenance program going over that period of time, we would clearly, clearly have some environmental problems with some of those cylinders.

As you know, some of the cylinders date back to the Manhattan Project, and they require a great deal of care and feeding, so to speak. We have to paint them; we have to inspect them. There are

still some cylinders that we have not re-racked in the way that we can inspect them visually. So that work needs to continue.

And obviously, as time goes on and as we complete the painting of at least one coat on each of the cylinders, the tempo of those activities can start to decrease.

Quite frankly, I do not know whether we could spend a great deal more money than we have identified at this point because of the sampling issue and because of the fact that it simply takes time to award a contract like this and to do it right.

So I do not think more money would help at this point.

Senator MCCONNELL. Mr. Chairman, if I could get in one more question, and then I will submit the balance of them to Mr. Magwood.

Senator DOMENICI. Please proceed.

CYLINDER MAINTENANCE

Senator MCCONNELL. In testimony before the Energy Committee 2 weeks ago, you claimed that your office has met the standards set by the Defense Nuclear Facilities Safety Board Recommendation 95–1 for depleted uranium cylinder management, and you are confident that the program has solved the cylinder storage problems.

If you are in full compliance, how do you justify a 30 percent increase in your budget for the cylinder—cylinder maintenance program at Paducah?

Mr. MAGWOOD. When I met with the Board, I believe it was in November, they asked why our funding for the cylinder maintenance program had decreased, because they knew our spending profile. And my response to that was that I had promised them that we would increase funding in the future to make up for the work that we had not done.

And I believe that their dismissal of the recommendation was predicated on the program for cylinder maintenance that we have put in place and on the idea that we would make up for the work that had not been accomplished. So it is work that still needs to get done, and the Board recognized that.

Senator MCCONNELL. Well, Mr. Magwood, as I indicated, I have a number of other questions—which in the interest of time, Mr. Chairman, I would like to submit to him and have the responses in writing at whatever time we——

Senator DOMENICI. They will be submitted. And would you answer that as soon as possible?

Mr. MAGWOOD. Absolutely.

Senator MCCONNELL. Thank you.

Senator DOMENICI. I have a series of questions to be answered by all three of you, but I am not going to ask them. I will submit them to you.

Senator Murray?

Senator MURRAY. Thank you, Mr. Chairman. I, too, have a series of technical questions. If I could just submit them, so that we can move along. I do have some questions for the second panel. So I would be happy to submit these.

Senator DOMENICI. Thank you very much.

Senator, do you have any further questions?

EBR-II SODIUM PROCESSING

Senator CRAIG. I do have just two more. And let me ask one of Mr. Magwood and one of Mr. Reicher. Mr. Magwood first.

There has been some criticism of delays and technical problems in processing the sodium coolant at EBR–II at the INEEL. Will you please describe what steps have been taken to correct those problems and assure that the sodium will be treated by March 2002, as the department has committed to do?

Mr. MAGWOOD. Yes, I will be happy to. Just to give a little bit of background for the Senators who may not be familiar with this, we have been treating the sodium that has been drained from the EBR–II reactor system as part of the process of shutting the reactor down. The first portion of that sodium was being converted to sodium hydroxide for disposal using a process that has been established at Argonne National Laboratory.

We had been on track to treat all this material and treat it to a dry, cake-like substance that can be disposed of. Unfortunately, late last year we discovered that the process was not working as Argonne had anticipated, and that we had found some liquid in some of the drums, the process material. We traced the problem down to a faulty textbook that one of the Argonne scientists used in designing the process. The temperatures were not at the right level.

We were very concerned about the fact that Argonne failed to refine this problem before they produced so much material. So I shut the process down, ordered Argonne's lab director into Washington to explain how this happened. I was very concerned about the fact that this went so long without being discovered.

And since that time, I have authorized a recovery path to begin processing the material again. But at the same time, I have also instructed Argonne to reorganize, to make the sodium processing activity report much higher in the Argonne chain of command.

And I have also established an independent technical expert that consists largely of the Merrick Corporation to observe what Argonne's activities are related to sodium processing, and report directly to my office on Argonne's technical progress.

So we put some things in place that we think will prevent any further delays in the program. It is something that we are extraordinarily unhappy about, quite frankly. But Argonne has been very cooperative in trying to rectify the problem. And I think we are on track to get this done.

Senator CRAIG. Thank you very much.

GEOPOWERING THE WEST

Mr. Reicher, one last question of you as it relates to your 2001 budget request for renewable resource technologies. It proposes $2 million to initiate a new program, and that is Geopowering the West to take advantage of the abundance of the geothermal resources that are found in the western States, including Alaska, Hawaii and my State of Idaho.

The initiative proposes to increase the use of geothermal for electrical production, in addition to fostering the use of low temperature sources across the West to supply energy for residents, com-

mercial establishments, and industrial applications. Before I ask the question, I think, while I may have sounded critical a few moments ago, I was attempting to sound probative, because I do believe that this initiative has some excellent opportunities.

Literally hundreds of homes in Idaho are heated by geothermal. The statehouse in Idaho and a large portion of downtown Boise is heated by geothermal wells that a lot of people do not know about. It is obviously abundant, and it is clean. It is limited.

But there is a great deal about the technology we do not know, and the replenishment of it that is critical, including injection wells and all of the kinds of things that would be necessary to return moisture to those levels, if we are going to attempt a full cycle system and all of those kinds of things with geothermal.

Obviously, space heat can accept substantially cooler temperatures compared to electrical generation by turbines or steam turbines coming off the geothermal heat. So while I am concerned about it, I am aware of it and spent a great deal of time watching it, looking at it, studying it, during the decade of the seventies, after America stood in energy lines and then became frustrated, as did the department at that time launch out into these new areas.

Is this an ambitious program? And could you explain specifically how the $2 million would be used that is in the budget now?

Mr. REICHER. Senator, I think it is an ambitious program, but I think it is a realistic one, given how far we have come with the technology and given the quality of the resource in the West. You note absolutely correctly that we are looking at both the electric potential and the heat potential of geothermal.

And those do differ substantially, and that this is why I think a subsidiary goal, in fact, of this Geopowering the West is to heat seven million homes using geothermal energy by 2010. I noted that the electricity goal is 10 percent of western electricity by 2020. So those two goals fit together quite nicely.

In terms of the overall geothermal work, we are in fact focused on some of the issues that you raise. For example, how do we replenish the geothermal resource? And there is a variety of interesting things that we are working on. And I will give you one very interesting example.

There are geothermal sites now in the West where the effluent from sewage treatment plants, which is difficult in some cases to dispose of, is literally injected down into the geothermal setting to replenish the moisture that you need to continue to make abundant use of the steam and the heat. So we are very mindful of that issue.

With respect to the initiative itself, the Geopowering the West, what we have found with these relatively immature technologies is that we have to acquaint people with how they work.

And most fundamentally, that, I think, is what Geopowering the West is about, to literally go into these hundreds of communities that have a good geothermal resource in the West and explore the possibilities of tapping that resource, from a technical perspective, from a financial perspective, and from an institutional perspective.

It may well involve in some cases the issue you raised in terms of the use of public lands, although I am told that we did look at sensitive lands in our analysis of the western resource.

So the opportunity is there in sort of a scientific sense, a technological sense. But what is missing is the kind of acquaintance that we think we need, community by community, State by State. And so the third goal of this is in fact to double the number of States with geothermal facilities to eight by 2006.

We have found in our wind program that when we actually get wind turbines into States that have not had them before, Minnesota, Iowa, Vermont, Wisconsin, Texas, the technology begins to feed on itself. It begins to grow because people become comfortable with it. They understand it. And they know that it works and that it works well. And that is what we need to do for geothermal.

DOE LABORATORY INVOLVEMENT IN GEOTHERMAL ENERGY RESEARCH

Senator CRAIG. Would you care to comment on the status of your search for designating a geothermal laboratory in the department?

Mr. REICHER. We today have a large number of our labs doing some geothermal work. And the decision that I made was that we needed to concentrate that work in a smaller number of labs. That has in fact been much of the focus in DOE and a whole host of programs, that we are spread too thin. And we are in the process, over the course of the next year, to identify both the lead labs for geothermal and then those that will remain in a supporting role.

And to be very frank with you, we will make some decisions that will likely take a couple of labs out of the geothermal business, at least as funded by my office. I will get you the details of that, and we will keep you apprised of it as we go forward.

[The information follows:]

GEOTHERMAL PROGRAM

The process for selecting a lead laboratory and supporting laboratories for our fiscal year 2001 geothermal program is under development. The Department expects to announce its decision before the end of this fiscal year. We will notify the Subcommittee when the process has been completed.

Senator CRAIG. I would like to know that. And I might suggest, just for your own information—and it would be worth your time or your people's time to observe if they have not—the State campus in downtown Boise, the Statehouse and many of its office buildings, are heated by geothermal. There is a marvelous avenue in Boise called warm springs with beautiful, old turn-of-the-century homes that have been heated since they were built by geothermal.

Geothermal is a technology that has been used in Idaho for about 85 to 90 years and very successfully. But clearly, the greater efficiencies by technology and the application can come about, I think, and probably in most areas where the absence of—and I think maybe that is an ambitious figure to get electrical generation to where you want it, because we have studied that rather thoroughly.

And while there is great opportunity for space heat, which is still as valuable in many instances, the opportunities for electrical generation, based on at least the exploration of the seventies and early eighties, would appear to be considerably more limited.

But I am interested in that. Idaho is interested in that. We have been at the business for a good long while.

Mr. REICHER. Well, Senator, I both look forward to working with you on this. And with respect to the electricity goal for 2020, what gave me a degree of confidence about that goal was the fact that California today gets 6 percent of its electricity from geothermal.

Senator CRAIG. Well, those are the fields in northern California that I have been to and looked at and that generation—and, of course, we are pretty knowledgeable in where it is today. The question is, can we create the turbines that are efficient enough to get more from them? I am not quite sure we can get more from the resource itself, as much as we can get more from technological development.

Thank you.

Thank you, Mr. Chairman.

Senator DOMENICI. I have to leave for a budget conference which starts at 11:00. And I am hoping to be through within a couple of hours. So we will have the budget finished. Would one of you be able to proceed with the next two witnesses? I would appreciate it immensely.

Let me just say, Mr. Reicher, just because I remain silent while my good friend talked about geothermal energy does not mean that all of us are abandoning our enthusiasm to the enthusiasm of his State. There are others of us who have similar geothermal interests with long-standing R&D efforts. And to see it rekindled is exciting to me. It sort of dropped off the wall.

Senator CRAIG. We think our geothermal is much better than his.

Senator DOMENICI. I did not want to say that, because --you can say it. You are from that side of the aisle.

Senator CRAIG. I do not come from a gambling State. I just know mine is better.

ADDITIONAL COMMITTEE QUESTIONS

Senator DOMENICI. Thanks to all three of you very, very much.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTION SUBMITTED TO THE DEPARTMENT OF ENERGY

QUESTION SUBMITTED BY DENATOR PETE V. DOMENICI

WVU NATIONAL EDUCATIONAL AND TECHNOLOGY CENTER

Question. In the fiscal year 1999 Energy and Water Development Appropriations bill, I added $3.5 million to be used toward the construction of the proposed $18 million National Educational and Technology Center to be located on the campus of West Virginia University. This proposed facility will provide a centralized national clearinghouse to maintain a comprehensive holding of regulatory source information, policy documents, reference material and scientific literature pertinent to maintaining a Positron Emissions Tomography facility.

Unfortunately, the distribution of these fiscal year 1999 funds to West Virginia University was delayed significantly until I was able to speak personally to Secretary Bill Richardson in December 1999. I am advised that these fiscal year 1999 funds were finally released to West Virginia University officials in mid-February of 2000.

In the fiscal year 2000 Energy and Water Development Appropriations bill, I secured an additional $1.5 million for this project. I understand that an application from West Virginia University will be submitted to the Office of Biological and Environmental Research of the Department of Energy in the very near future. This project is among my highest priorities in the Energy and Water Development bill.

What assurances can you provide me that delays similar to last year will not occur and that the award of the fiscal year 2000 funding along with any future funding the Congress may provide for this project will be made in a timely manner?

Answer. There is currently no delay on the release of funding for fiscal year 2000 Congressional earmarks. The fiscal year 2000 earmarks are being reviewed by the relevant program offices to ensure the funds will be appropriately spent and fit within the mission of the Department of Energy. The review requires cooperation between the program office and the entity to which the funds are proposed to be released. A detailed scope of work and process must be developed that may take several weeks or months. In addition, the Department must make a determination of competitive or non-competitive financial assistance that requires review by legal counsel. Once this review process is completed, each proposal is submitted to the Secretary for final approval.

QUESTIONS SUBMITTED TO THE OFFICE OF ENERGY AND RENEWABLE SCIENCE

QUESTIONS SUBMITTED BY SENATOR PETE V. DOMENICI

FUNDING FOR SOLAR AND RENEWABLES AT THE NEW MEXICO LABS

Question. Mr. Reicher, I am concerned about a disturbing trend in the requested funding for some of your programs. For example, department-wide, the solar and renewable request increased 32 percent, while Sandia's solar and renewable work increased only 12 percent and LANL received a small 4 percent increase. All other labs doing solar and renewables work received between 25 percent and 40 percent increase in funding for fiscal year 2001.

I have heard that funding was reduced for the New Mexico labs because you perceived a "lack of support by the New Mexico delegation." Will you commit to me today that funding decisions will be based on merit rather than on political considerations?

Answer. Solar and Renewable Energy funding is, and will continue to be, allocated based on the performer's ability to execute the technical and management tasks required by the programs. Political considerations do not influence DOE decisions on the distribution of funds, unless a specific mandate is included in the Energy and Water Appropriation Bill.

In the case of Sandia National Laboratories, several factors influenced the apparently modest (12 percent) increase in the funding request for fiscal year 2001:

—On October 1, 1999, Sandia significantly altered its cost structure. This resulted is an almost 4-fold increase in Sandia's overhead charge on subcontracts (from 7 percent to 26 percent).

—Much of the work in EE, and solar and renewable resources technologies in particular, is applied research that is done in cooperation with industry, therefore warranting a significant amount of subcontract work, with private sector partners.

—To get the most for the taxpayer's dollar, prudent program management required these programs to shift as much of the subcontracted work as possible to other field offices/labs (e.g., ALO, GFO, NREL). While the benefits gained from direct management by Sandia were sufficient at the lower overhead rates, the four fold increase exceeds any benefits that might accrue from Sandia managing the subcontracts.

It should also be noted that although this resulted in reduced subcontracting at Sandia, some of these funds went directly to subcontracts in New Mexico. These include the City of Albuquerque Development Services Division (a Million Solar Roofs partner), EG&G, KPMG, New Mexico State University—Las Cruces, Spectra Research, and the Laguna Native American tribe. This change will allow more money to reach our partners than if they had been fully burdened by Sandia's new overhead rates.

New Mexico laboratories continue to be integral partners in the development of solar and renewable technologies. Sandia, for example, is the lead laboratory in the development of solar parabolic troughs and dishes, and provides essential engineering support to the development of photovoltaic and solar water heating technologies. The 12 percent increase proposed for Sandia in the fiscal year 2001 DOE budget request indicates DOE's continuing support for this very important laboratory.

In the case of Los Alamos National laboratory, funding will be essentially constant for fiscal year 2001, reflecting the constant budgets for the Solar and Renewables programs where Los Alamos receives substantial funding—High Temperature Superconductivity and Hydrogen.

Los Alamos has an important role in the High Temperature Superconductivity program, having received $6,210K in fiscal year 1999 and $5,700K thus far in fiscal year 2000. Since a substantial amount of the fiscal year 1999 funding was for new cooperative work with industry, this year's spending will actually be somewhat higher. In the future, this cooperative research is expected to be carried out in the new research park now under construction. This will build on Los Alamos' success in working with industry to rapidly bring high temperature superconductivity to commercialization.

The Hydrogen program responsibilities for Los Alamos have increased with their being selected as Lead Laboratory on all research and development activities in the area of utilization. This includes all work on sensors, fuel cells, and other applications. In addition, Los Alamos is also responsible for managing the technology validation systems for the production of hydrogen from renewable energy resources. A budget increase for fiscal year 2001 is anticipated due to these increased responsibilities.

WIND POWERING AMERICA

Question. Mr. Reicher, the budget request contains $5.0 million to initiate Wind Powering America—a new national program to accelerate use of wind power in America. Can you tell the committee how this program will be executed? How will DOE determine the appropriate use of the funding requested? What criteria or guidelines will be used to evaluate competitive requests or proposals?

Answer. Wind Powering America will leverage federal dollars with states, industry, utilities, and rural communities to undertake regionally-based activities to identify and facilitate opportunities for increasing wind power use. DOE Regional Offices, National Laboratories, and selected stakeholder organizations will evaluate technical, institutional, and regulatory issues and provide appropriate assistance to overcome barriers to wind power development. In addition to in-house funding, specific competitive solicitations will be developed as required for activities to be carried out through stakeholder partnerships to achieve the goals of the initiative. These solicitations and their related evaluation criteria will be tailored to suit the specific topics for the procurement, and will be developed in accordance with Federal procurement regulations.

Question. Specifically, how will the $5.0 million be used? Is this for lobbying, advertising, or just what?

Answer. Funding will support regionally-based analyses and strategy development (including stakeholder meetings and workshops); technical support such as feasibility analyses, identification of power transmission constraints, distributed generation opportunities, and wind mapping; and outreach activities to involve key potential partners such as rural electric cooperatives, Federal agencies, and State regulatory agencies. The DOE Regional Offices will assist the Wind Program in determining the most effective use of Federal resources to address the technical and institutional challenges unique to each region.

Question. What are the expected annual out year funding requirements?

Answer. The estimated out year funding of $5 million annually for five years is expected to leverage over $100 million in new investment, driven by needs expressed by regional stakeholders.

INTERNATIONAL CLEAN ENERGY INITIATIVE AND INTERNATIONAL NUCLEAR ENERGY RESEARCH INITIATIVE

Question. Mr. Magwood and Mr. Reicher, the budget request includes $6.8 million under Nuclear Energy to initiate the International Clean Energy Initiative/International Nuclear Energy Research Initiative. I note that there are several additional new items under Solar and Renewable Energy programs where the Department is requesting new money for the International Clean Energy Initiative separately. Explain the scope of these initiatives and why it is necessary to begin these new programs in fiscal year 2001?

Answer. The International Clean Energy Initiative (ICEI) and International Nuclear Energy Initiative (INEI) are important to assure access to these emerging markets by the U.S. private sector and to support economic development aspirations of the developing world. Economic development and quality of life improvements for most of the world's population will require a major expansion in the provision of energy services in the decades ahead. Most of the expected growth will take place outside the United States, especially in developing countries and countries with economies in transition, and these markets represent some of the most significant growth opportunities for U.S. energy firms in the coming decades. The World Bank has estimated that developing countries alone, over the next four decades, will require five

million megawatts of new electrical generating capacity to meet anticipated needs (Today's total world installed capacity is about three million megawatt's). The result of satisfying the needs of the developing countries will be to double the world's installed capacity during the next four decades. This translates into investments approaching $15 to $25 trillion dollars and accounts for more than half of the projected global investments in energy supply during this period. Ninety percent of the markets for coal, nuclear, and renewable energy technologies are expected to be outside the United States. Improvements in efficiency would require additional investment. Strategic investments today—by the U.S. government and the private sector—will assure strong participation in those markets tomorrow.

The private sector plays a major role in energy innovation and related international cooperation. Private sector investments alone, however, will not adequately capture the full range of public benefits-like reduced pollution, increased energy security, long-term technology innovation, and developmental equity issues. Government activities focused on filling gaps in private-sector investment can achieve significant benefits for the United States.

Present government programs cannot meet the challenges of future global energy growth. In 1997, government expenditures on international cooperation on energy innovation amounted to about $250 million per year, but these funds were primarily in nuclear fission and fusion. The government has few programs to bridge the gap between R&D and commercial deployment. This gap impedes the commercialization of innovative energy technologies. Strengthening North-South cooperation on clean and advanced energy technologies is a promising approach which would help secure developing country participation in the international framework for addressing global climate change as requested by the Senate's 1997 Byrd-Hagel Resolution. Further, the United Nations Framework Convention on Climate Change—signed by President Bush and ratified by the U.S. Senate—explicitly calls for such cooperation from the United States and other Parties. This cooperation would help provide alliances, information, and foundations needed for developing countries to take on greenhouse gas emissions-reductions targets and timetables. Indeed, such cooperation can lead to sustainable development with the U.S. private sector playing a significant role.

Question. What is the estimated total cost of these programs?

Answer. The initiatives in Energy Efficiency and Renewable Energy would be $26 million, in Fossil Energy $13 million, in Nuclear Energy $7 million for fiscal year 2001, for a total of $46 million, in fiscal year 2001.

Question. What are the annual out year funding requirements expected?

Answer. Following the PCAST recommendations, funding levels for the ICEI would increase for five years. Specifically, PCAST called for a 20 percent increase in investments in international cooperation on energy innovation each year for five years from an initial program budget in fiscal year 2001 of $250 million. However, the President requests a smaller amount in fiscal year 2001—$100M for ICEI in fiscal year 2001, ($46M for DOE)—and no decision has been made on future funding levels.

Question. What commitments does DOE have from other countries to support these programs?

Answer. These programs promote U.S. technologies. Other countries have programs promoting their technologies. Because these activities are proposed new initiatives, no firm commitments have been obtained at this time. Once funding levels have been provided, strategies for obtaining optimal cost sharing with the host country will be developed and implemented.

Question. Provide a chart for the record which shows each country participating and how much funding each country has committed to support the programs.

Answer. Cost sharing information is not presently available.

Question. Provide a detailed breakout for the record which shows the total amount requested for both of these programs and how that is spread by program throughout DOE.

Answer. The distribution of International Clean Energy Initiative/International Nuclear Energy Research Initiative (ICEI/INERI) is shown in the following table.

ICEI/INERI BUDGET REQUEST FOR FISCAL YEAR 2001

Organization	Description	Amount
EERE	Total Energy Efficiency and Renewable Energy Request	$26,000,000
BTS	Total Office of Building Technology, State and Community Programs	4,500,000

ICEI/INERI BUDGET REQUEST FOR FISCAL YEAR 2001—Continued

Organization	Description	Amount
	Development of whole building design tools and building codes and standards, including energy efficient building equipment and appliance standards	3,000,000
	Development of cost-effective biomass-fuel-based stoves	500,000
	Develop International Energy Star training program	1,000,000
OIT	Total Office of Industrial Technology	2,500,000
	Establish an industrial best practice program and assist in the development and harmonization of standards	2,500,000
OPT	Total Office of Power Technologies	19,000,000
	Develop tools for resource estimation/mapping, data bases, etc	1,500,000
	Develop strategic options for deploying distributed grid-connected PV, wind, biomass power/coproducts	6,000,000
	Develop strategic options for minigrid/offgrid applications for PV, wind, biomass	6,000,000
	Provide analytical support in development of country-specific models	500,000
	Provide technical assistance in developing long term relationships among U.S. industry, DOE laboratories, and host country institutions	1,000,000
	Provide technical assistance for regulatory reform, including support for the measurement/analysis of social/environmental costs	1,500,000
	Provide technical assistance in project assessments and prefeasibility analyses	2,500,000
FE	Total Fossil Energy Request	13,000,000
	Develop new and adapt existing analytical tools to assess potential combined heat & power (CHP) sites. Collaborate on prefeasibility assessment of potential sites. Develop international performance based standards for CHP	4,000,000
	Develop strategic options for addressing methane leakage reduction	5,000,000
	Promote the Asia Pacific Economic Cooperation (APEC) Natural Gas Initiative	1,000,000
	Develop strategic options for advanced coal power and hydrogen production and use	3,000,000
NE	Total Nuclear Energy-Fission Request	7,000,000
	Support for the INERI the purpose is to preserve and enhance the possibility that nuclear power could play an expanding role in addressing climate change and other energy-related challenges in the next century	7,000,000
	Total	46,000,000

LIFE CYCLE EVALUATION OF ENERGY SYSTEMS

Question. Do you concur that a study of the total life cycle costs and impacts of each energy source needs to be completed?

Answer. The Department explores life-cycle impacts of energy choices in policy and program deliberations through both exploration of primary or total energy impacts and estimation of the costs and benefits of energy investments over the life of the investment. As an example of how consideration of primary energy flows can benefit energy analyses, we may look to the renewed interest in combined heat and power technologies, where the benefits are most clearly seen through a life-cycle framework that recognizes overall system efficiency.

The Energy Information Administration provides detailed information on primary energy use that Department analysts and interested stakeholders can use to explore the environmental or other impacts of energy policy choices and programs. Programs such as the Federal Energy Management Program (FEMP) may report primary as well as site energy consumption in order to provide a fuller picture of energy impacts.

The National Renewable Energy Laboratory recently undertook a series of somewhat more detailed studies on behalf of the Department utilizing computer models of energy and materials flows ("input-output models"). DOE also substantially participates in the U.S. Interagency Working Group on Industrial Ecology, Material and Energy Flows (chartered by the Council on Environmental Quality) which provides a useful platform for life-cycle explorations. A recent short report of this working group may be found at: http://www.oit.doe.gov/mining/materials.

The consideration of energy cost savings over the life of equipment investments is utilized extensively by the Department in its formulation of policies, programs, and rulemakings, with analyses based as appropriate on OMB cost-benefit analysis guidelines, and guidance such as 10 CFR 436 on the use of lifecycle cost analysis for energy use in the buildings sector.

These and similar on-going efforts provide the Department with a strong basis for exploring the life-cycle implications of energy policy, program, and investment choices and, as a result, a separate detailed study does not seem to be necessary at this time.

Question. How would you recommend that this task be accomplished?

Answer. Assessments of life cycle costs and impacts of energy sources should continue to be reflected in analytic efforts throughout the Department. Continued focus on enhancing the tools and capabilities that we utilize in undertaking these assessments can provide the Department and interested congressional committees with on-going, up-to-date information about the costs and impacts of energy policy and program choices.

CARBON COST SAVING INITIATIVE

Question. Mr. Reicher, the budget request includes $1.5 million for a new Carbon Savings Initiative. What is the objective of this new program?

Answer. The new initiative we propose seeks to reduce carbon emissions by increasing the net energy output of biopower systems per unit of carbon used and couples this feature to a carbon sequestration process. We envision this initiative being carried out in two steps. These are: (1) investigating ultra-high efficiency processes that optimize carbon utilization, such as combined heat and power systems, with overall objective of reaching 90 percent process efficiency; and (2) examining novel chemical processes for carbon management.

The first step of this initiative is structured to introduce higher efficiency electricity generation technologies. By increasing electricity production capabilities and overall system efficiency, this maximizes energy production per unit of biomass and optimizes carbon conversion. For example, the majority of today's coal-based electricity capacity is only 33–35 percent efficient for electricity and recovers none of the waste thermal energy. If we can develop small utility scale systems that have high efficiency for electricity production (greater than 40 percent), and that also produce usable thermal energy (either steam or hot water), the net result will be higher overall efficiency. The European industry has realized this fact, and almost all biomass power facilities are combined heat and power systems that reach 33 percent electrical efficiency and 85 percent overall efficiency.

The second step is to investigate the potential of mineral-based carbon sequestration mechanisms that permit carbon capture in a stable mineral form during the production of electricity. It is well known that alkaline metals will capture carbon as demonstrated by the Co_2 acceptor process that uses calcium. The initiative is designed to explore the ability of various minerals to form carbon containing inorganic compounds during thermochemical processes. These compounds may have even greater carbon sequestration potential than calcium.

Question. What do you expect the annual out year funding requirement to be?

Answer. The initiative will be carried out through multi-phase competitive solicitation process, starting with feasibility studies, and proceeding through proof of concept prototypes to field verification. The effort will require approximately $8 million over a period of four years.

PHOTOVOLTAIC ENERGY SYSTEMS

Question. Mr. Reicher, the budget request for Thin Film Partnership Program under Photovoltaic Energy System in previous years indicates that the funding level of around $19 million was considered appropriate "based on staff experience and historical precedence in similar activities."

Are there any studies or analysis to support a funding request of $19 million in fiscal year 2001?

Answer. Studies and publications that provide insight into the potential and critical importance of thin films for low-cost photovoltaics include:

—"Millennium Special Issue, PV 2000—And Beyond," Jan 2000, Progress in Photovoltaics, V. 8 No. 1, M. Green, E. Lorenzo, H. N. Post, H. W. Schock, K. Zweibel, P. Lynn (eds), John Wiley, London, 200 p.

—"Issues in Thin Film PV Manufacturing Cost Reduction," K. Zweibel, 1999, Solar Energy Materials and Solar Cells, V. 59, p. 1–18.

—"Thin Films: Past, Present, Future," K. Zweibel, 1995, Progress in Photovoltaics, Special Issue on Thin Films, John Wiley, London (also available as NREL report TP–413–7486), V. 3, 279–293.

These studies describe the research activities in the Thin Film Partnership Program and their importance to DOE's mission to develop photovoltaics as an energy-significant source of electricity. The Thin Film PV Partnership Program is the central research activity in the development of a class of advanced PV technologies based on ultra-thin semiconductor layers. There are four thin film technologies under development: amorphous silicon, copper indium diselenide, cadmium telluride, and thin crystalline silicon. To date, each of these technologies has been brought from a very early, laboratory state to a successful pilot-scale manufacturing stage. Funding for each technology is about $4.5 million, which is much less than what was spent on single crystalline silicon in its similar stage of development.

The PCAST study, Federal Energy Research and Development for the Challenges of the Twenty-First Century, addressed the need for photovoltaic R&D. In particular, it recommended that photovoltaic research be increased to $133 million for fiscal year 2001 (the DOE request for all photovoltaic research is $66 million in fiscal year 2001). And though the document is silent on the specific funding for thin film research, this research comprised approximately fifty percent of the photovoltaic budget at the time of the recommendations. To extrapolate from the PCAST recommendations would suggest a thin film budget of $66 million, or over three times the current request of $19 million.

The DOE PV Program has chosen to emphasize thin films because they are widely seen as having the greatest potential to significantly reduce PV electricity costs in comparison to existing photovoltaic options, e.g., crystalline silicon wafer technologies. PV cost is the greatest barrier to using PV for energy-significant applications such as rooftops on residences and commercial buildings. Our work in the Partnership is the critical activity within this commitment to cost reduction. The Partnership funds research in materials science, process development, PV cell and modules. Over two-thirds of the funding in the Partnership is awarded to US universities and businesses on a competitive basis. The remainder funds the National Renewable Energy Laboratory's (NREL) internal research in thin films as well as the Partnership management costs. The NREL in-house researchers are acknowledged leaders in their fields, holding world records for cell efficiencies in two of the three leading thin film technologies and leading the National Research Teams made up of all the participants in the Partnership's research activities (about 150 PhD scientists nationwide).

Funding for thin film research within the DOE Program has been level (at approximately the $15–19M/year) for the last decade. This lack of enhancement reflects the general static funding of the DOE PV Program. It does not reflect the needs of thin film semiconductor research, which are vastly larger than this level. For example, similar semiconductor research such as the development of flat panel displays (which also requires the low-cost deposition of thin semiconductors over large areas) absorbs significantly greater research funding. By comparison, the Federal resource commitment to thin film PV is small and generally viewed as sub-critical. We have leveraged our Federal research resources with those of forward-thinking members of the private sector to sustain our generally recognized progress in this field. We have also had the benefit of the DOE's ongoing commitment to thin films (i.e., allowing funding stability within a constrained funding environment) as well as the effective organizational leadership of the Partnership, which has received many national awards. Indeed, the Partnership has been the co-recipient (with industrial members) of four prestigious R&D 100 Awards that recognize new PV products based on these key thin films. Because of the successes of the Thin Film Partnership, the US leads the world in thin film photovoltaics, a major achievement of the DOE PV Program.

In general, were funding for this key element of the PV Program to fall below its already sub-critical level, it would possibly end our Nation's chances of leading the world in the development of this new large-scale source of electricity.

Question. Is there a minimum industry (non-Federal) cost share that is required on all contracts or grants under this fiscal year 2001 solicitation?

Answer. As in the past, businesses are expected to cost-share. Although the Partnership does not require 50 percent or greater cost sharing, we often receive it (see next question) because those who propose higher cost-sharing are more likely to be awarded funds. The Partnership breaks down contracts with companies into two categories: Technology Partners and R&D Partners. Technology Partners are companies with a clear commitment to near-term manufacturing. They are usually embarking on pilot production of a new thin film technology. R&D Partners are companies and universities who are developing the necessary innovations to maintain fu-

ture progress toward truly low-cost PV energy production. Their work is further from commercialization, so they are required to provide a smaller proportion of cost-sharing.

The Partnership also recognizes the much greater burden that cost-sharing can put on a small business by reducing those requirements as compared to a large business. The breakdown for the Partnership is as follows:

[In percent]

Corporate Cost-Sharing Required	Technology Partner	R&D Partner
Large Business	40	20
Small Business	20	10

PHOTOVOLTAIC ENERGY SYSTEMS

Question. Provide for the record a list of contracts or grants for the past 2 cycles which show the breakout of Federal and non-Federal costs.

Answer.

Thin Film Partnership 1998–2001 Subcontracts (3 years)

Total: $53,830

DOE Funding: $37,157

Private Cost-Share: $16,673 (31 percent of all subcontracts, including universities)

Organization (state)	University Small or Large Business	Period	Total $K	[Cost Share]
United Solar (MI)	S	5/5/1998–5/5/2001	5,560	[2,780]
SSI (CA)	L	11/24/1998–11/24/2001	5,409	[2,705]
Solarex (VA)	L	5/8/1998–5/8/2001	5,192	[2,792]
EC/U. Delaware (DE)	U	10/23/1998–10/23/2001	4,120	[360]
AstroPower (DE)	S	11/24/1997–11/24/2000	3,737	[1,475]
First Solar (OH)	S	5/30/1998–5/31/2001	3,735	[756]
BP Solar (CA)	L	6/30/1998–6/30/2001	3,509	[2,009]
EPV (NJ)	S	6/15/1998–6/15/2001	2,953	[591]
Global Solar Energy (AZ)	S	4/4/1998–4/4/2001	2,475	[777]
ISET (CA)	S	6/29/1998–6/29/2001	2,169	[208]
ECD (MI)	S	5/10/1998–5/10/2001	1,888	[943]
U. Toledo (OH)	U	3/3/1998–3/3/2001	1,566	[623]
USF (Tampa, FL)	U	7/25/1998–7/25/2001	1,411	[433]
CSM (CO)	U	7/21/1998–7/21/2001	994	.....
Penn State (PA)	U	9/16/1998–9/16/2001	825	.....
UF Gainesville (FL)	U	9/7/1998–9/7/2001	810	.....
ITN (CO)	S	3/25/1998–3/25/2001	796	[63]
Iowa State U. (IA)	U	8/30/1998–8/31/2001	702	.....
MV Systems (CO)	S	12/31/1997–12/31/1999	565	[40]
Harvard (MA)	U	6/14/1998–6/14/2001	540	.....
CSU (CO)	U	3/19/1998–3/19/2001	461	.....
UNC (NC)	U	1/27/1998–1/27/2001	430	.....
Washington State U. (WA)	U	2/28/1998–2/28/2001	411	.....
Oregon (OR)	U	1/15/1998–1/15/2001	410	.....
Weizmann Institute	U	9/26/1998–9/26/2001	405	.....
Syracuse (NY)	U	5/23/1998–5/23/2001	405	.....
Daystar (CO)	S	6/26/1998–6/26/2001	399	[80]
MRG (CO)	S	2/9/1998–2/9/2001	378	[38]
U. Utah (UT)	U	1/13/1998–1/13/2001	284	.....
CSM (CO)	U	7/21/1998–7/21/2001	252	.....
Penn State (PA)	U	12/14/1998–12/14/2001	156	.....
UCLA (CA)	U	6/19/1998–6/19/2001	143	.....

Organization (state)	University Small or Large Business	Period	Total $K	[Cost Share]
U. Illinois (IL)	U	9/15/1998–9/15/2001	140	.....
Florida Solar Energy Center (FL)	U	1/4/1998–1/4/2001	128	.....
Purdue (IN)	U	2/6/1999–2/6/2002	127	.....
NIST (CO)	Lab	6/30/1999–6/30/2001	345	.....
Total			53,830	[16,673]

NATIONAL RENEWABLE ENERGY LABORATORY

Question. Mr. Reicher, funding for the National Renewable Energy Laboratory increased from $123.3 million in fiscal year 2000 to $169.5 million in fiscal year 2001. What accounts for the large (37.5 percent) increase?

Answer. The funding increase in fiscal year 2001 at the National Renewable Energy Laboratory (NREL) is primarily for three programs: Biopower and Biofuels Energy Systems; Wind Energy Systems; and the Photovoltaic Energy Systems programs.

The Biopower and Biofuels Energy Systems Program is expanding its focus to include a full complement of efficient biomass technologies, size ranges, and feedstocks (agricultural residues, wood residues, energy crops, etc.) The program is working to balance research and demonstration efforts to most effectively advance the technology. To achieve these results, the budget request for Biopower has been increased for thermochemical conversion research which is performed at the National Renewable Energy Laboratory's Thermal Conversion User Facility. The increased funding will also support A new initiative to increase the net energy output of biopower systems per unit of carbon used.

The Wind Energy Systems Program is seeking increased support in the area of Cooperative Research and Testing. Cooperative Research and Testing is comprised of several programs such as: Wind Powering America, Regional Field Verification, and International Clean Energy Initiative. The Wind Powering America Program is a new nationally-led program to accelerate use of wind energy in the United States. This is a regionally-based program to coordinate and implement tailored strategies to help each region of the Nation benefit from harnessing their wind power resources. The Regional Field Verification Program will issue competitive solicitations in key regions for wind power development in the United States. These competitive solicitations will support projects addressing unique siting, regulatory, electric power system, and market issues in each region. The use of wind power in central station generation, distributed power, and off-grid or mini-grid applications will be targeted by this program. The International Clean Energy Initiative will play a vital role in meeting growing needs in developing countries for both distributed, grid-connected power, and remote off-grid and mini-grid power. This program will competitively award partnerships with industry for analyses of distributed wind power systems in weak grid applications, and to explore opportunities to enhance these applications through wind energy forecasting, grid control, storage options, and/or firming with natural gas or other generation sources. Competitive solicitations will be awarded for wind hybrid system verification projects in developing countries where local utilities or villages currently use stand-alone diesel power systems.

The Photovoltaic Energy Systems Program is requesting increased funding to support: Fundamental Research in the areas of Measurement and Characterization, Basic Research/University Programs, and High Performance Advanced Research; and Technology Development in the areas of Manufacturing R&D, Systems Engineering & Reliability, PV Building Integrated R&D, Partnerships for Technology Introduction, Million Solar Roofs Initiative, and International Clean Energy Initiative.

The funding table below reflects all Solar and Renewable Energy program funding in fiscal year 2000 and fiscal year 2001 at NREL.

FISCAL YEAR 2001 CONGRESSIONAL BUDGET REQUEST—NATIONAL RENEWABLE ENERGY LABORATORY

[Dollars in thousands]

	Fiscal year		
	2000	2001	Change
Biopower Energy Systems	$9,621	$14,506	$4,885
Hydrogen Research	4,743	4,437	(306)
Hydropower	152	154	2
Biofuels Energy Systems	21,801	30,516	8,715
Geothermal	1,785	2,040	255
Electric Energy Systems and Storage	1,644	3,475	1,831
High Temperature Superconductivity	928	945	17
Energy Storage Systems	59	85	26
Transmissions Reliability	657	2,445	1,788
NREL Facility Maintenance	1,100	1,900	800
Wind Energy Systems	25,172	39,136	13,964
Concentrating Solar Power	6,288	6,218	(70)
Solar Building Technology Research	1,469	3,359	1,890
Photovoltaic Energy Systems	48,318	60,112	11,794
International Renewable Energy Program	1,226	3,692	2,466
Total	123,319	169,545	46,226

CLIMATE CHANGE TECHNOLOGY INITIATIVE

Question. Mr. Reicher, the President proposes to spend $1.2 Billion in fiscal year 2001 in the Climate Change Technology Initiative within the DOE. Of this $1.2 Billion, $5 million is identified for nuclear energy and $56 million is identified for Fossil Energy.

Most of the funds, about 95 percent of them, are set aside for Solar and Renewable Energy work and Energy Conservation. Since the combination of nuclear and fossil fuels account for about 70 percent of the electrical generation in this country, the trivial role identified for these sources in the Administration's Climate Change Initiative seems quite questionable.

Why does the Department focus 95 percent of this Initiative's resources on energy sources that provide less than 1 per cent of our electrical energy, and allocate minimal funding for the fossil and nuclear resources that provide 70 percent of our electricity?

Answer. The Climate Change Technology Initiative (CCTI) is a cross-cut of Administration programs that are related in some way to climate change, including direct-combustion (e.g., in buildings and automobiles) as well as electricity production and use. As such, the CCTI encompasses only a portion of the Department's budget request. Because of it's focus on opportunities to reduce greenhouse gas emissions, virtually all EERE expenditures are included, while only those portions of the fossil, nuclear, and basic science budgets that related to reducing greenhouse gas emissions are included in the CCTI. In reviewing the CCTI components, it is important to remember that the EERE components related to the buildings and industry end use sectors are often related to electricity production in general, and to utilizing more effectively fossil- and nuclear-produced electricity.

In developing its fiscal year 2001 budget request, the Department looks carefully at areas of opportunity to meet each of its strategic goals. The overall budget typically includes many programs that meet multiple Departmental goals and objectives, and many of the programs included in the CCTI address additional goals, and may even be included in other initiatives. Areas of opportunity for specific goals, objectives, or initiatives may or may not be proportionate to current energy use patterns. This is especially true for opportunities found in emerging energy resource areas, such as renewable energy and many advanced sources of energy conservation, where smaller current market share is a factor of historical technology development, and not necessarily indicative of future energy resource uses or opportunities for meeting environmental and related energy challenges. The Departmental request for renewable energy resources, both those that produce electricity and those that can be used in direct heat or other energy applications, is based on their large po-

tential to help meet multiple environmental, security, and other national energy goals and objectives in our evolving energy markets.

FUNDING SHORTFALL

Question. Mr. Reicher, I do not think the Subcommittee will be able to provide a 32 percent increase in Solar and Renewable Energy programs. Would you provide the Committee your recommendations of the allocation of funding at the current level?

Answer. We appreciate the fact that there are budgetary constraints that may limit Congressional flexibility in meeting all the Solar and Renewable Energy funding requests made by the Department for fiscal year 2001. However, the request for these proposed programs was developed after long deliberation and is considered vital to addressing the country's need for clean, domestically-produced electric power generation, transportation fuel, heat energy, and transmission/distribution/reliability technologies. These proposed programs also contribute substantially to the energy security, economic and environmental needs of the country, and are an integral part of the broader budget package proposed by the Administration for fiscal year 2001. Given the importance of these programs to both the near and longer term well-being of the Nation, we stand by the programs and funding levels as requested.

WORKING WITH NNSA LABS

Question. The National Nuclear Security Administration started operation as a semi-autonomous agency with the Department on March 1. The NNSA labs of Los Alamos, Sandia, and Lawrence Livermore have a long tradition of supporting a broad range of scientific initiatives beyond weapons activities. As the NNSA was created, I emphasized the importance of the NNSA labs continuing their multi-program support of the Department and other federal agencies.

The enabling legislation, in Section 3264, state that: "The Secretary, in consultation with the Administrator, shall establish procedures to provide for the use . . . of the national security labs by elements of the DOE not within the Administration . . ."

Despite the legislation, I am concerned that the NNSA labs will not continue to receive high priority funding from the Department.

Will each of you assure me that you will continue to aggressively fund projects within the NNSA labs?

Answer. The NNSA laboratories have been important resources for our renewable energy technologies in the past, and we expect these laboratories will continue to be valuable to our future research activities. We expect to continue using the expertise of these labs at levels consistent with our historical funding positions.

Question. Have discussions been initiated between your Office and NNSA to define mechanisms to maintain close collaboration, both for NNSA laboratory support to your Office and for your labs to support NNSA as required?

Answer. We will continue to maintain strong communications with the Office of Defense Programs, and we feel we have agreement regarding the role of NNSA laboratories in our research programs.

Question. Do you foresee any barriers to maintaining close working relations between your Office and the NNSA?

Answer. No, we do not foresee any barriers to our currently strong working relationship with NNSA.

QUESTIONS SUBMITTED BY SENATOR SLADE GORTON

GEOTHERMAL PROJECTS

Question. In your testimony, you made clear your support for geothermal energy and new programs to support developing this energy source. I also support these programs. However, this Administration is not unified in its support of this industry. There are two geothermal projects in California—the output of these projects are expected to be purchased by the Bonneville Power Administration and sold in the Northwest—that have their respective EIS process completed. They have been waiting approximately 18 months for the Forest Service just to make a decision on these projects, and if the decision is not made in the next few days they could miss another construction season. This delay is irresponsible and sends all the wrong signals to geothermal developers. I support these projects, as do many environmental organizations in the state of Washington. How can this industry expand when the Administration is not unified in its approach to this energy source?

Answer. The Department of Energy continues to work closely with industry to conduct comprehensive research and development to establish geothermal energy as an economically competitive, environmentally sound contributor to the U.S. energy supply. We have recently announced three solicitations seeking industrial partners to identify, develop, and use geothermal resources. These solicitations offer substantive support to the Administration's new initiative, GeoPowering the West, which will bring the benefits of geothermal energy to 19 western states. As is addressed in the following question, other arms of this Administration are aware of the Administration's interest in advancing the use of alternative energy sources. We are confident that actions such as these will allow the nation to realize its considerable potential for new geothermal development over the coming decade.

Question. What have you done to urge the Forest Service to make a decision?

Answer. On March 2, 2000, I sent letters regarding the projects to high-ranking officials of the Department of Agriculture and the Department of Interior. I noted that both projects will contribute significantly to the President's energy and environmental policy goals, and they represent an economically-sound, productive use of energy resources on multi-use Federal lands. The letters expressed the wish that the remaining issues preventing the projects from moving ahead would be resolved in a timely manner.

Question. What will you commit to do to get the Forest Service to make a decision before this construction season is lost?

Answer. I stated my support for the projects in my letters of March 2. However, the Forest Service and Bureau of Land Management are solely responsible for the decision making process with regard to the projects. Those agencies are well aware of the timing issues, and I understand that decisions will be forthcoming in the near future.

AGRICULTURE AND CARBON SEQUESTRATION

Question. As you know, the Energy Efficiency Budgets are in a separate Subcommittee, but I have a question relative to the Renewable Budgets. What is the overall strategy of the Department relative to Agriculture and Carbon Sequestration? As you know, there are several Bills that have been introduced in the Senate dealing with this issue. Please give me a short description of the Department of Energy's role in Agriculture relative to Renewable Energy, Bio-energy and Carbon Sequestration strategies.

Answer. The Department of Energy has a long history of scientific and technical involvement in agricultural-related issues. In this fiscal year, the department is spending over $100 million in this area; most of that is focused on applied research on bio-based products and bio-energy, or the use of crops, trees and wastes to make transportation fuels, electricity and chemicals for a whole host of consumer goods, like plastics, paints and adhesives. A new Department of Energy report recently concluded that by the year 2010, the agricultural and forestry industries could help reduce greenhouse gases by producing and utilizing more of these bio-based products.

The report, "Emission and Reduction of Greenhouse Gases from Agriculture and Food Manufacturing", was the first comprehensive analysis of U.S. agricultural activities and their impact on greenhouse gas emissions. The report found that agricultural and forestry industries currently produce one-tenth of all greenhouse gases emitted in the U.S. A copy of the report is submitted.

President Clinton's Executive Order 13134 on bio-based products and bio-energy, issued in August, 1999, was designed to stimulate development of a new bio-based industry. The President's goal of tripling U.S. use of bio-based products and bio-energy by the year 2010 could create billions of dollars in new income for farmers and rural Americans, while reducing greenhouse gas emissions by tens of millions of tons of carbon. The use of advanced agricultural practices—such as improved forest and animal waste management, cultivation, and irrigation techniques—can also contribute to this initiative.

Question. What is the role of the National Laboratories and Universities in the opportunities that exist, if there is an Agricultural-related initiative in the fiscal year 2001 Budget?

Answer. We consider our National Laboratories and Universities full partners with the federal government, industry and growers in the implementation of the President's Bio-based Products and Bio-energy Initiative. For example, representatives of all of these important groups have been involved from the very beginning in the development of a new strategic vision for a bio-based industry, and they will participate in the drafting of a technology roadmap to guide our research and development spending. Planning is now underway for a workshop to discuss and show-

case what the nation's state universities and land-grant colleges can contribute to the growth of this emerging industry. In addition, competitive solicitations for research and development proposals related to this area will be open to participation by both the national laboratories and the academic community.

MEMORANDUM FOR UNDERSTANDING

Question. As you know, the DOE has signed a memorandum of understanding with the Association of State Energy Research and Technology Transfer Institutes "ASERTTI", The California Energy Commission "CEC", and the New York State Energy Research and Development Authority "NYSERDA" to work together to leverage state and federal resources through collaboration of energy R&D planning and research efforts. The state energy offices are also participating in these efforts though they do not have a specific MOU in place. This past budget there was roughly $6m put in place for joint energy R&D projects through the competitive process to work with state entities. It is my understanding that DOE received approximately 160 proposals of which 6 to 8 were from the MOU partners, which means non-MOU partners are also competing for the funds.

It is important to note that California and New York have millions of dollars earmarked for energy R&D planning and projects as do other states in the public benefit charges. It is not unreasonable to expect the states will have as much money if not more than the federal government to spend on R&D. It is the goal of the MOUs to work together in planning and executing R&D to be good stewards of the resources and provide benefits to the people of the states and country. The basic premise of collaboration between states and the federal government is in its infancy and it would be advantageous to find ways to foster its growth and benefits rather than strangle it with unnecessary bureaucracy. How is the $6 million state R&D solicitation proceeding?

Answer. In light of our close work with the committee staff, we have issued a solicitation requesting proposals from state energy offices and state energy research institutions for cooperative RD&D in seven technical areas. These areas were identified through a collaborative effort which began more than a year ago when DOE signed Memorandums of Understanding with the California Energy Commission (CEC), the New York State Energy Research and Development Agency (NYSERDA), and the Association of State Energy Research and Technology Transfer Institutes (ASERTTI). DOE, led by the Office of Energy Efficiency and Renewable Energy (EERE), and working with the Office of Fossil Energy (FE), Office of Science (OS) and the Energy Information Administration (EIA), created a Joint Planning and Collaboration Committee to identify research opportunities for collaboration and to determine the best ways to do joint budget planning and form collaborations. Out of these discussions seven research areas of collaborative focus and collaborative teams resulted: Schools, Transportation, EIA data, Petroleum Oil Field Operations, Microturbines and Fuel Cells, and Distributed Generation and Combined Heat and Power. The solicitation is currently open and does not close until April 27, 2000.

The solicitation is posted at: http://www.eren.doe.gov/golden/solicitations.html.

Question. How many responses did DOE receive to the solicitation?

Answer. The solicitation for $6 million has drawn over 130 pre-application proposals. We expect to award projects in one or all of the technical areas identified by the DOE/State Joint Planning and Collaboration Committee (i.e. Schools, Transportation, EIA data, Petroleum Oil Field Operations, Micro-turbines and Fuel Cells, and Distributed Generation/Combined Heat and Power). We encouraged proposers to form teams with multiple state partners to improve selection chances. The goal of the solicitation was to make the $6 million as responsive to multi-state collaboration interests as possible.

Question. Is the competitive process the appropriate mechanism to meet the objectives of the MOUs with ASERTTI, CEC, NYSERDA, and NASEO?

Answer. Yes, it is. A competitive process will draw the highest quality research proposals address multi-state agency needs, and foster collaborations among states on proposals. We encouraged proposers to form teams containing multiple state partners to improve their proposals' selection chances as well as to cooperate among states. The selection criteria awards additional selection points for having a multi-state proposal. The cost share requirement of 50 percent will leverage both DOE and State agency money.

Question. Does DOE have plans to increase the amount of funds to collaborate with their MOU partners?

Answer. Although the President's budget request did not propose funding for the State Collaborative Research and Development for fiscal year 2001, this program is a high priority. In fact, like the Congress, we believe that this program is a crucial

element of our research and development efforts and should be continued on an annual basis at least at the same level of funding.

The omission of a funding request for this program in our fiscal year 2001 budget was due to a timing issue. First, the fiscal year 2000 budget was not enacted and signed by the President until November 18, 1999. Second, the detailed elements of this program were not set forth in the Conference Report, and it was necessary for our Assistant Secretary and staff to conduct detailed analytical work and to work with the Subcommittee staff in reaching agreement on the full scope and objectives of the program. Such agreement was not reached until late December 1999, and by that time, our fiscal year 2001 budget already had been transmitted to and approved by OMB. At that point, EERE was not able to make funding modifications.

In our discussions with the Subcommittee staff in December 1999, we discussed the need for multi-year funding to support the type of projects envisioned under the State Collaborative Research and Development Program and the fact that it was too late to include funding under our fiscal year 2001 budget request. The Subcommittee staff indicated that funding would be considered for fiscal year 2001, if EERE's progress was good in implementing the initiative in fiscal year 2000. Based on these discussions, EERE is soliciting projects for up to three years in its State Collaborative Research and Development Program solicitation. We believe that continuing on the path described in the above two approaches will increase the funding for joint collaborations with our MOU partners.

QUESTIONS SUBMITTED BY SENATOR LARRY CRAIG

HYDROPOWER

Question. The advanced turbine research and development program request for fiscal year 2001 is $5 million. The budget justification for fiscal year 2001 states that the plan is to complete laboratory biological studies of the effects of turbulence on turbine-passed fish.

Could you explain why there is no funding being requested for the pilot scale proof of concept testing of the conceptual design to verify biological criteria and predicted biological performance using live fish?

Answer. DOE is committed to the goal of developing hydropower technology which will reduce turbine-induced fish mortality to 2 percent or less. No fiscal year 2001 funding was requested for the proof-of-concept, pilot-scale, test of the fish-friendly turbine design developed by the Alden Research Laboratory, because fiscal year 2000 funding was considered sufficient to cover this activity and allow it to continue through fiscal year 2001. Additional funds may be requested in fiscal year 2002 to complete full-scale testing. In addition, fiscal year 2001 funding is requested for biological research, including sensor fish refinement, to gain the necessary understanding of stresses and behavior of fish in the turbine environment. The DOE program will also explore other fish-friendly designs by providing funding support for biological testing of turbines provided by industry.

RENEWABLE ENERGY BENEFITS TO FAMILY FARMERS

Question. Times are particularly tough on the family farm right now with low commodity prices and a farm safety net that has failed the agricultural community. Renewable energy sources—like wind energy and biomass—have potential to help struggling farmers through these difficult times. Could you paint a picture of how a family farmer might be able to make a profit by creatively using renewable energy sources?

Answer. Renewable energy sources hold the potential to both reduce the energy cost of the farmer's operations, and provide new business opportunities. In the future, a traditional farm could be converted into a fully integrated system for producing energy, chemicals, plastics, and other products in addition to food. Some of these technologies are suitable for small and medium-size farms. To cite a few examples, the traditional farmhouse and barn could receive power from a photovoltaic array and advanced wind turbines. Livestock manure may be used to fuel a biogas plant. Trees genetically created to grow to maturity in two to three years, and other farm crops, potentially grown on currently underutilized agricultural land, could be used for biomass power.

The Department of Energy supports the Clinton administration's analysis of the Comprehensive Electricity Competition Act that was sent to Congress last year. The analysis underscores the substantial economic and environmental benefits since the advent of competition. The Administration's package is projected to benefit both urban and rural consumers in all regions of the country primarily due to the forces

of competition being unleashed throughout the industry. However, several provisions are aimed specifically at rural areas, to ensure that rural residents garner the full benefits of restructuring. These include:

—authorizing new grants for remote and rural electric service and electricity services to Native Americans;

—retaining current arrangements for the provision of federal power at cost-based rates;

—establishing a Renewable Portfolio Standard that will generate new economic activity and raise farm income in rural areas as it promotes important environmental and energy security needs; and

—providing for a rural safety net.

As another renewable, wind power is already helping family farmers in Iowa and Minnesota. Assume a typical farm of 1000 acres in Iowa. Using very conservative spacing that does not pack turbines tightly and accommodates roads and property lines, one might expect about fourteen 750 kW turbines installed. These would produce almost 35 million kilowatt-hours of electricity per year. Assuming typical royalties of 2 percent of gross revenue and a selling price of 4 cents per kilowatt-hour, these turbines would provide revenue to the farmer of about 28 thousand dollars per year or two thousand dollars per wind turbine. In North Dakota, with a better wind resource, revenues would be closer to 40 thousand dollars per year. All of this is accomplished with limited impact on cultivated lands. Wind developers make as much use as possible of existing service roads and allow farmers to cultivate right up to the roads. All in all, no more than 5 percent of cultivated land is lost due to turbine pads, transformers, distribution lines and service buildings. Similarly, livestock would be minimally affected.

In addition, Wind Powering America is an initiative announced by Secretary Bill Richardson last year to increase substantially deployment of wind energy through a regionally-based effort in which technical, institutional and environmental barriers to wind energy development are identified by local groups and resolved with the help of the Department of Energy, its laboratories, the wind industry and other stakeholders. The Department has just announced the award of 15 projects, worth $2.7 million, that will support this initiative. In summary, a small Federal investment is expected to catalyze wind development in regions where there has been little or none, leading the way to a goal of 10,000 MW by 2010.

WIND ENERGY

Question. You are requesting $6.7 million for the Next Generation Turbine Project, an increase of $1.1 million from the fiscal year 2000 Appropriation. What is this increase to be used for and when do you expect completion of the program?

Answer. The Next Generation Turbine project is aimed at development of advanced wind turbines capable of generating electricity at a cost of 2½ cents per kWh at sites with winds that average 15 mph or better, which can be found in many areas of the country, particularly the Great Plains. This is a challenging task and we have two projects under way. The requested funding, including the increase of $1.1 million, will support design and fabrication of final turbine prototypes, which is a highly cost-intensive phase of the projects. Because of the challenging nature of the goal, proof-of-concept turbines have been fabricated and will be tested in fiscal year 2000 to verify design concepts at a more modest scale. We plan to complete testing of final prototypes in fiscal year 2003 and close out the program by the end of that year.

Question. You are requesting $5.0 million for a new effort called Regional Field Verification. Would you explain the purpose and outcome of this large new start?

Answer. Regional Field Verification is intended to introduce advanced wind turbines into regions of the country having promising wind resources. Competitively selected wind projects will help the Department and industry verify performance and refine wind energy technologies while addressing unique siting, regulatory, and market issues in each region. The model would follow the Turbine Verification Program, in which a small amount of Federal funds were leveraged by utilities and industry to install several projects, varying in size from a few machines to over 5 megawatts. We expect that a small amount of highly leveraged funding and technology transfer will greatly expand understanding of the performance of wind energy in selected regions permit State regulatory authorities, land owners and investors to make informed decisions about wind energy technology. We estimate the Federal funds would be leveraged at least 4 to 1 overall in these projects.

Question. You are requesting $5 million for the Wind Powering America initiative. Please explain the composition of this new effort and what you hope to accomplish through it.

Answer. Wind Powering America is a grass roots effort to accelerate the use of wind energy throughout the United States. It is a regionally-based effort in which technical, institutional and environmental barriers to wind energy development are identified by local groups and resolved with the help of the Department of Energy, its laboratories, the wind industry and interested stakeholders. Initially, we have identified the Upper Midwest for emphasis, but we are working to establish activities in all regions. We've had a series of meetings across the country to define the strategy for this initiative. We are planning extensive involvement of the Department of Energy Regional Offices in carrying out this strategic plan to most effectively employ Federal funds in addressing technical and institutional challenges unique to each region. Through this decentralized effort we hope to leverage a small Federal investment to catalyze development in regions where there has been little or no wind energy market penetration goal is 10,000 MW by 2010.

QUESTIONS SUBMITTED BY SENATOR PATTY MURRAY

AGRICULTURE AND CARBON SEQUESTRATION

Question. As you know, the Energy Efficiency Budgets are in a separate Subcommittee, but I have a question relative to the Renewable Budgets. What is the overall strategy of the Department relative to Agriculture and Carbon Sequestration? As you know, there are several Bills that have been introduced in the Senate dealing with this issue. Please give me a short description of the Department of Energy's role in Agriculture relative to Renewable Energy, Bio-energy and Carbon Sequestration strategies.

Answer. The Department of Energy has a long history of scientific and technical involvement in agricultural-related issues. In this fiscal year, the department is spending over $100 million in this area; most of that is focused on applied research on bio-based products and bio-energy, or the use of crops, trees and wastes to make transportation fuels, electricity and chemicals for a whole host of consumer goods, like plastics, paints and adhesives. A new Department of Energy report recently concluded that by the year 2010, the agricultural and forestry industries could help reduce greenhouse gases by producing and utilizing more of these bio-based products.

The report, "Emission and Reduction of Greenhouse Gases from Agriculture and Food Manufacturing", was the first comprehensive analysis of U.S. agricultural activities and their impact on greenhouse gas emissions. The report found that agricultural and forestry industries currently produce one-tenth of all greenhouse gases emitted in the U.S. A copy of the report is submitted.

President Clinton's Executive Order 13134 on bio-based products and bio-energy, issued in August, 1999, was designed to stimulate development of a new bio-based industry. The President's goal of tripling U.S. use of bio-based products and bio-energy by the year 2010 could create billions of dollars in new income for farmers and rural Americans, while reducing greenhouse gas emissions by tens of millions of tons of carbon. The use of advanced agricultural practices—such as improved forest and animal waste management, cultivation, and irrigation techniques—can also contribute to this initiative.

Question. What is the role of the National Laboratories and Universities in the opportunities that exist, if there is an Agricultural-related initiative in the fiscal year 2001 Budget?

Answer. We consider our National Laboratories and Universities full partners with the federal government, industry and growers in the implementation of the President's Bio-based Products and Bio-energy Initiative. For example, representatives of all of these important groups have been involved from the very beginning in the development of a new strategic vision for a bio-based industry, and they will participate in the drafting of a technology roadmap to guide our research and development spending. Planning is now underway for a workshop to discuss and showcase what the nation's state universities and land-grant colleges can contribute to the growth of this emerging industry. In addition, competitive solicitations for research and development proposals related to this area will be open to participation by both the national laboratories and the academic community.

QUESTIONS SUBMITTED BY SENATOR BYRON L. DORGAN

PHOTOVOLTAICS/SOLAR PROGRAMS

Question. For a number of years the DOE has been putting significant funding towards various photovoltaics (solar) energy programs. What have been the gains of this program?

Answer. When the Photovoltaic R&D Program began a number of years ago there was no industry, no terrestrial products, and no market. The first solar cells were developed in the 1960s and used to power satellites. In the late 1970s the U.S. Department of Energy began an R&D program to develop a clean alternative for use in terrestrial applications. At that time, the only known way to make a solar cell was with crystalline silicon, and this was a labor intensive process that produced six percent efficient cells that cost hundreds of dollars per Watt. Over the years the Department has built a successful program that has made dramatic improvements. Scientists in the national laboratories, industry and universities have steadily improved the silicon solar cell. As a result, the technology progressed significantly, with automated manufacturing capabilities, improved device efficiencies, greater reliability, and longer module lifetimes. Today, silicon cells and modules are 14 percent efficient and cost around $4.00 per Watt. More important to the Program, during this time scientists have discovered new, more innovative ways to make different kinds of cells that will ultimately cost less to make than the silicon cell. This new family of cell materials is called thin film technologies and consists of amorphous silicon, cadmium telluride, and copper indium diselenide. In the 1970's thin films didn't exist. In the early 1980's scientists struggled to make six percent efficient devices in the laboratory. Today we have pilot-plant sized manufacturing lines producing 11-percent efficient thin film modules for the same cost as the more mature silicon technology. In summary, in a relatively short period of time the Department's Photovoltaic R&D Program has created a photovoltaic industry and a promising, clean alternative energy source where once there was none. Since 1980, the U.S. PV industry has grown an average of 20 percent a year and in 1999 manufactured over 60 megaWatts of products.

Question. Do you see value in continuing this type of expenditure in the area of photovoltaics?

Answer. Yes. The return on investment for photovoltaic R&D is well worth the cost. In addition to the dramatic improvement in science, technology and the growth of the industry to date, we, and industry, believe this is just the beginning. Last June, about 35 representatives from the U.S. PV industry held an intensive workshop to develop an industry roadmap. The result of this meeting concluded that a sustained growth rate of 25 percent is achievable. At such a growth rate, worldwide shipments would approach 18 billion watts per year by 2020, representing a direct PV market of about $27 billion and an indirect market double that. Of this, U.S. PV shipments would reach 7 billion watts by 2020, with more than 3 billion watts for domestic use. This means that PV could be supplying about 15 percent of the nation's added generation capacity. And a large, growing industry bodes well for American workers. According to some estimates, the PV industry creates more than 3000 direct and indirect jobs for every $100 million in direct module sales. As this industry grows toward its potential, it will generate hundreds of thousands of jobs.

TRIBAL

Question. The DOE currently has a Tribal Energy Program. What efforts has the DOE taken to work with tribes to develop renewable systems.

Answer. The Tribal Energy Program is a reconfiguration of the pre-existing Renewable Indian Energy Resources Program for fiscal year 2001 and represents an evolution in the Department's continuing work with the Tribes in assisting them to develop their energy resources and in addressing their energy needs. The Department recently released a report, "Energy Consumption and Renewable Energy Development Potential on Indian Lands" (March 2000), which discloses that some 14.2 percent of Native Americans, versus 1.4 percent of the general population, do not have access to electricity. The Department has been attempting to rectify that situation, beginning in fiscal year 1994 with our efforts under Title XXVI of the Energy Policy Act of 1992 whereby 35 Tribes received competitive awards to construct renewable energy projects on Tribal lands; continuing in fiscal year 1999, where, through our Remote Power Program, we competitively awarded $1.9 million to eight Tribes to construct both grid-connected and off-grid renewable energy projects which will bring reliable power to Tribal residents; and culminating this year with $700,000 being made available to Tribal Colleges and Universities through our Competitive Solicitation Program for feasibility studies for renewable energy projects

that will educate these future Tribal leaders on the benefits of renewable energy technologies. For fiscal year 2001, the Tribal Energy Program builds on these activities to develop expertise among Tribal leaders and communities on energy system design and implementation and to ensure that energy planning and installations are technically, economically, and environmentally sound.

NO YEAR FUNDS

Question. One issue that was addressed at last years appropriation hearing was the use of "no year funds" for Research and Development. I see that you are requesting language this year that would grant you "no year funds" for research and development. What would (sic) the Administration done to ensure that the administration of these funds is properly carried out?

Answer. The Administration, through the Office of Energy Efficiency and Renewable Energy, has instituted numerous management improvements over the course of the last 18 months. We began by conducting internal reviews to assess the management problems and identify those actions that could most improve our performance. This led to the establishment of a Chief Operating Officer who also serves as the Deputy Assistant Secretary for Planning, Budget and Management (PBM). The Chief Operating Officer is the single point of focus for all business management and resource issues. The Chief Operating Officer oversees all planning, budget formulation, budget execution, program evaluation, field management, and human resources activities for the entire EERE enterprise.

We also participated in an external review by the National Academy of Public Administration (NAPA). Their review identified areas for improvement and also acknowledged the improvement that has already occurred. Their report has been published and was the subject of a hearing before Congressman Regula's House Appropriation Subcommittee on Interior and Related Agencies, April 4, 2000.

The NAPA report recommended two-year or no-year funding for the Energy Supply appropriations account. The report discussed the financial management problems associated with one-year funding and stated that, "some unproductive project fiscal and administrative effort could be avoided", by funding the account on a multi-year basis.

The NAPA team also found that the Strategic Management System (SMS) through the Chief Operating Officer is sufficiently robust to achieve the level of funds control envisioned by Congress. The SMS is a systematic process that outlines all proper funds control mechanisms and ensures that proper checks and reviews occur in time to prevent problems. The system is over 75 percent implemented, and is on track for full implementation before fiscal year 2001.

BIOMASS RESEARCH AT THE ENERGY AND ENVIRONMENTAL RESEARCH CENTER (EERC)

Question. Last year, this Subcommittee included report at my request in the fiscal year 2000 Energy and Water Development Report. The language, which was not negated in the conference report, read:

> "Within the amount provided for systems development, $1,000,000 is for the continuation of biomass research at the Energy and Environmental Research Center on key barrier issue impeding the technical feasibility, cost-effectiveness, and environmental acceptability of biomass utilization processes. The funding is intended to advance the Center's work in integration of biomass with fossil fuels to increase baseload renewable electricity generation, development of practical methods for using biomass in advanced power systems, and improvement of efficiency and environmental performance in agricultural processing and forest-based product industries."

It is my understanding that the EERC has asked you and your staff to follow up on the implementation of this report language to date, there has been little action toward this end. Will you please give me some guidance about how the EERC should proceed?

Answer. It is a primary objective of the Department to issue competitive solicitations whenever possible to ensure best value. As a result of discussions in Spring, 1999 between your staff and the Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy (EERE), it became apparent that opportunities exist for the Department to expand its efforts in co-firing by including subbituminous and lignite coals, this would provide an opportunity for EERC's expertise. As a result, a solicitation was issued (Supplemental Announcement to the Broad Based Solicitation DE–PS36–99GO10383), with the objective of successfully demonstrating the viability of co-firing biomass with lignite for power production. Although DOE intended to make one award of up to $1.0M, no responses were received.

In fiscal year 2000, the Department, requested proposals again through an open solicitation. This solicitation entitled "Biomass Cofiring Opportunities" (DE–PS26–00FT40775), administered through National Energy Technology Laboratory (NETL) on behalf of EERE, is aimed at cost-shared applications for research and development on co-firing biomass feedstocks with fossil fuels. It also included a component involving the co-firing of biomass with both lignite and subbituminous coals. It is our understanding that EERC has responded with an application. Although the review process has just begun, it is our intention to inform your office about the outcome as soon as the selection process has been completed.

QUESTIONS SUBMITTED TO THE OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY

QUESTIONS SUBMITTED BY SENATOR PETE V. DOMENICI

ACCELERATOR TRANSMUTATION OF WASTE

Question. Mr. Magwood, during the current year, $9 million was provided for the Accelerator Transmutation of Waste (ATW) program. ATW offers an exciting new option for dealing with spent nuclear fuel. I understand the Department recently completed a technology road map called for an expenditure of $280 Million over six years. This year was the first step down this road of technology exploration.

Despite this road map and the promise of ATW, the proposed budget for next year is zero. Please explain why the Department's zeroed the funding for ATW after your road map effort expressed significant enthusiasm for if?

Answer. In fiscal year 2000 the ATW program is conducting trade studies on various technology pathways to identify the specific directions to conduct experimental research. The Department believes that a full evaluation of the various research activities needs to be accomplished and presented to both the Office of Management and Budget (OMB) and the Office of Science and Technology Policy (OSTP) before we consider any future integrated ATW research program.

Question. I understand that there may be opportunities in a new advanced accelerator applications program that would combine the ATW program with the Accelerator Production of Tritium program (APT).

Has a joint program combining APT and ATW been considered in your Office and could you comment on the national benefits that might accrue from such an approach?

Answer. A joint APT/ATW program has been discussed between the Office of Defense Programs (DP) and the Office of Nuclear Energy, Science and Technology (NE). If a new program were established, for example, the investment of over $150 million in the Low Energy Demonstration Accelerator would be leveraged to provide the foundation of a test-bed for new frontiers of nuclear science and engineering that could be used in the ATW program. Of particular interest is the coupling of an accelerator to sub-critical reactor fuel assemblies, a new area of science which is not well understood today. This type of research could lead to new technology such as Generation IV reactors, advancements in proliferation-resistant reactors and fuel, advanced materials, and space nuclear power. In addition, an activity of this nature would help rebuild our critical nuclear infrastructure in terms of education, expertise and facilities.

NUCLEAR ENERGY PROGRAM

Question. Mr. Magwood, the budget request includes a new line, Special Purpose Fission Power Technology, for $2 million.

Why is the work proposed under this request not duplicative of work performed under Radioisotope Power Systems?

Answer. The funding request for the Special Purpose Fission Technology effort is included as one of four sub-items under the funding line Advanced Radioisotope Power Systems in the fiscal year 2001 budget request. The other three sub-items are: Radioisotope Power Systems, Special Applications, and Pu-238 Acquisition and Processing. While the other three sub-items are focused only on efforts related to radioisotope power systems, the Special Purpose Fission Power Technology effort would focus only on an assessment of fission power technologies. Therefore, this proposed work does not duplicate work in the other sub-items.

Question. Explain why the $2 million is needed.

Answer. This funding is needed to support a technology evaluation effort to examine options and requirements for using small, compact fission reactor systems capable of meeting higher power requirements (both thermal and electrical) for emerging

future needs. In the near-term, the effort would be focused on projected space exploration applications, and would provide for the assessment of performance attributes and requirements associated with use of these systems for meeting advanced propulsion and power needs (both for in-space and planetary surface operations). Due to the long lead time necessary to develop these systems, it is important that an evaluation effort be conducted at this point to provide credible information to support long-term planning. This near-term assessment would be an interagency effort with NASA funding significant portions of key technology areas. The DOE funding is critical to serve as the core of a coordinated U.S. assessment analysis. If the assessment identified a need for a large R&D effort in the future, most of the funding would be provided by the user agency.

The requested funding would make possible a coordinated evaluation effort consisting of nuclear fission reactor system concept definition and technical evaluation; technology subsystem assessment; and identification of programmatic requirements associated with system development including safety, technology advancements, and test facilities. An interagency assessment report would be developed providing the results of this evaluation effort and options to support future mission planning, integration, and decision-making related to potential development of these systems for meeting future needs.

ADVANCED REACTOR DEVELOPMENT

Question. Mr. Magwood, significant progress has been made in re-establishing a research base in nuclear engineering in this country. Despite this progress, I'm concerned that we are not doing enough, especially since nuclear energy is providing immense environmental benefits to the nation as it supplies 22 percent of our electricity. I've heard excitement among some groups about a Generation 4 reactor that would have lower costs and greater safety than current systems.

Do you agree that the time is right to encourage technical evaluation of a Generation 4 reactor? Are there technologies in sight that make it feasible?

Answer. This is absolutely the right time to evaluate Generation IV nuclear power systems. Both we and the international community recognize that the economic, reliable, and widespread availability of electric power is an essential element in all developing countries' plans to improve the quality of life for their citizens. Worldwide energy demand is predicted to increase substantially, as much as 65 percent by 2020 (International Energy Agency, 1999). Because of its attributes, nuclear power will be a key option for many countries, both industrialized and developing. In order to meet demand and bring advanced technologies to commercial use over the next 15 to 20 years, the time is now to begin planning for tomorrow's nuclear energy systems.

The United States has an indispensable role as a leader in developing nuclear technologies and has begun to reach out to our partners overseas to explore the potential for working on these technologies together. This past January, the Department sponsored a meeting with government representatives of eight other countries to begin discussing Generation IV advanced nuclear energy technologies. In April, a small group of experts from those countries met again to develop specific recommendations on the future direction of multilateral cooperation on Generation IV technologies. In early May, the Department sponsored a three-day workshop with a broader group of approximately 100 international and U.S. experts from the government agencies, research organizations, and representatives of the International Atomic Energy Agency and other multilateral organizations to begin the process of establishing requirements and attributes of Generation IV reactor technologies.

The results of these discussions and considerations will help us initiate a DOE-led Generation IV technology roadmap, which will bring together the views and requirements of the entire U.S. and international research community to set a direction for advanced research to develop next generation nuclear power systems.

From the discussions that we have had with the international and U.S. research community, it's clear that there are many innovative and enabling technologies that make Generation IV reactors feasible over the next fifteen years. The Nuclear Energy Research Initiative research includes several Generation IV concepts such as secure transportable a LWR, encapsulated fission heat sources, reactors that directly convert energy from fission, and new designs that produce hydrogen or methane for alternative fuel sources. The United States has made a very promising start. Working with the research community, we hope to apply what we have learned in creating our Generation IV technology roadmap to set upon a path that will enhance the long-term prospects for building advanced nuclear power systems in the twenty-first century.

Question. Would development of a Gen 4 reactor by the United States help re-establish some degree of international leadership and rejuvenate interest in the profession?

Answer. The Office of Nuclear Energy, Science and Technology's initiation of its Generation IV activities, combined with other programs such as our Nuclear Energy Research Initiative, is helping reassert U.S. technology leadership in the nuclear R&D field. One of the most satisfying aspects of launching our new programs has been the eagerness with which the international community has embraced the return of the U.S. to leadership in the nuclear R&D field.

The countries participating with us in our Generation IV international activities are as concerned as we about rejuvenating the nuclear science and technology profession. The primary focus of our efforts is to attract the best young talent available into the nuclear technology field. Apart from Generation IV activities, NE is actively working both domestically and with international partners to make advanced education in the nuclear science and engineering available and attractive to talented, ambitious students. It is our hope that these efforts will yield an increase in the number of students entering nuclear engineering programs at our universities and rejuvenate interest in the nuclear profession.

NUCLEAR ENERGY PLANT OPTIMIZATION (NEPO)

Question. What led to cancellation of the original NEPO solicitation and when will grants be awarded?

Answer. There was no cancellation of the original NEPO solicitation. The Department signed a Cooperative Agreement with the Electric Power Research Institute in May 2000 that provides for the solicitation and award of research contracts for 14 projects to be initiated this fiscal year. Research awards under NEPO will be made this summer.

NATIONAL NUCLEAR SECURITY ADMINISTRATION LABS

Question. The National Nuclear Security Administration started operation as a semi-autonomous agency within the Department on March 1. The NNSA labs of Los Alamos, Sandia and Lawrence Livermore have a long tradition of supporting a broad range of scientific initiatives beyond weapons activities. As the NNSA was created, I emphasized the importance of the NNSA labs continuing their multi-program support of the Department and other federal agencies.

The enabling legislation, in Section 3264, stated that: "The Secretary, in consultation with the Administration, shall establish procedures to provide for the use . . . of the national security labs by elements of the DOE not within the Administration . . ."

Despite the legislation, I am concerned that the NNSA labs will not continue to receive high priority funding from the Department. Will each of you assure me that you will continue to aggressively fund projects within the NNSA labs?

Answer. The NNSA Act allows the NNSA laboratories to continue to perform significant research for all DOE programs, for other federal agencies and non-federal organizations. It also permits the Department to continue the important role the NNSA laboratories have as part of the integrated laboratory system.

The Department recognizes that non-defense research is important to maintain the vital overall science and technology base and core competencies of the NNSA laboratories. This point was recently reinforced by Secretary Richardson in a memorandum to the Heads of Departmental Elements on May 11, 2000, in which he reinforced the Department's strong commitment to encouraging and supporting the diversity of work performed by the Department's national laboratory complex, including the laboratories that report to the NNSA.

The Office of Nuclear Energy, Science and Technology (NE) will continue work closely with the NNSA laboratories in research and other programmatic activities of our office. As part of NE's Isotope Program, Nuclear Energy Research Initiative program, Accelerator Transmutation of Waste program, and our space power systems program, we are engaged in a number of important research and other mission-related activities with the NNSA laboratories, including Sandia National Laboratory, Lawrence Livermore National Laboratory, and Los Alamos National Laboratory. We are committed to continuing to work closely with these laboratories as we accomplish the mission of NE.

Question. Have discussions been initiated between your Office and NNSA to define mechanisms to maintain close collaboration, both for NNSA lab support to your Office and for your labs to support NNSA as required?

Answer. An Implementation Plan for the NNSA has been prepared and issued. This implementation plan is structured as the mechanism that provides maximum

flexibility for both NNSA and non-NNSA laboratories, to continue to perform the type of research that they do best and to allow the initiating program sufficient control over their research. The Implementation Plan is structured to ensure continued utilization of the national laboratory complex by all parties. It allows the NNSA laboratories to continue to perform significant research for all DOE programs and to work together with the non-NNSA laboratories efficiently and effectively to complement each others' expertise in important scientific collaborations that can benefit all Departmental programs, including the NNSA.

Question. Do you foresee any barriers to maintaining close working relations between your Office and the NNSA?

Answer. No. The Implementation Plan for the NNSA adequately addresses the concerns you raise, and the Department is committed to maintaining a culture that permits the laboratories to continue this effective relationship.

QUESTIONS SUBMITTED BY SENATOR SLADE GORTON

FAST FLUX TEST FACILITY

Question. Given the imminent approval of the Department's $9 million reprogramming request on FFTF (and again, I very much appreciate the chairman's support for this reprogramming), what is the timetable for conducting the NEPA review on future restart or shutdown options for the FFTF?

Answer. The National Environmental Policy Act (NEPA) review addresses more than actions regarding the Fast Flux Test Facility (FFTF). As recommended by the Nuclear Energy Research Advisory Committee and directed by Secretary Richardson, this review will evaluate through the preparation of a Programmatic Environmental Impact Statement (EIS) enhancing the Department of Energy's nuclear facility infrastructure to meet growing civilian research needs over the next 35 years. The alternatives of restarting or deactivating FFTF will be included in this evaluation. The Programmatic EIS is expected to be completed by the end of the current calendar year. The final decision on the future of the FFTF will be made as part of the broader decision on the nuclear research facility infrastructure. This decision is expected to be issued in January 2001, following completion of the Programmatic EIS and other related documents, including studies analyzing the costs and nonproliferation impacts of proposed actions, and a long-range nuclear technology research and development plan.

Question. Again assuming the approval of the reprogramming, what are the Department's plans to maintain FFTF in a safe condition and to minimize layoffs?

Answer. The funding available under the proposed reprogramming would be used by the Department to maintain the FFTF in a safe standby condition in compliance with applicable environmental and safety regulations, through the end of the fiscal year. Impact to FFTF staff will be minimized through reassignments, as practicable, to retain needed expertise and skills-mix.

Question. Please describe the nuclear science and technology research missions that are suitable for FFTF, including the production of medical isotopes.

Answer. The FFTF, if restarted, would be a reliable and versatile source of neutrons, and would provide the largest core volume for neutron irradiation among the Department's research and test reactors. Neutron irradiation in the FFTF could support a number of nuclear science and technology missions, meeting specific civilian nuclear technology needs in the areas of isotope production, domestic and international nuclear technology research and development (R&D) and plutonium-238 production for national needs.

In isotope production, FFTF could provide critically needed medical isotopes used to diagnose and treat a number of conditions, including various cancers. Even conservative market surveys project that for many medical isotopes future demand will exceed supply.

In the area of nuclear technology R&D, FFTF core space could be used to support research efforts in transmutation of radioactive wastes, development of proliferation resistant fuels, space power systems development, and materials development for advanced reactor applications and fusion research.

FFTF could also support specific needs in plutonium-238 production for use as a source of heat and electricity in long-range space probes.

Question. Our country's increasing dependence on foreign oil and the groaning [growing] concerns on global warming underscore the importance of maintaining nuclear power as an energy option. Yet our nuclear energy research infrastructure is deteriorating. Please explain the role the FFTF could play in supporting a robust nuclear energy R&D program.

Answer. If restarted, the FFTF would operate as one of a suite of DOE-owned test and research reactors. As a nuclear science and irradiation user facility it would significantly increase the nation's available neutron flux capacity for materials and nuclear fuels testing crucial to nuclear technology R&D efforts. Working in tandem with other nuclear facilities such as the High Flux Isotope Reactor and the Advanced Test Reactor, FFTF, if restarted, could help the Department address growing civilian nuclear technology research needs over the next 35 years. As such, FFTF could directly support research and development under the Nuclear Energy Research Initiative (NERI); for example, materials testing to support advanced fuel development. Materials testing could also provide data to support life extension of existing reactor plants. FFTF could also be an important tool in technology development to help reduce nonproliferation concerns and in expansion of cooperative international nuclear research efforts. A robust nuclear energy R&D program would include active U.S. involvement and leadership in international reactor research programs.

Question. FFTF is the nation's most modern nuclear test reactor. If FFTF were to be decommissioned, what is the next newest research reactor that the Department would rely on to support the nation's nuclear R&D missions? How old is that reactor? Can it meet the Department's needs?

Answer. The Department's nuclear R&D missions needs are met by a suite of facilities, including two operating research and test reactors, the High Flux Isotope Reactor (HFIR) and the Advanced Test Reactor (ATR), which provide the currently available core capacity for neutron irradiation and testing. HFIR and ATR have operated for 33 and 31 years, respectively. The FFTF operated for 10 years before being placed in standby in 1993.

Since 1993 the DOE Complex has experienced a significant decline in the total availability of steady-state neutrons for research, testing, and isotope production, while the Department's nuclear R&D and production needs are increasing. The Department is evaluating how best it can meet these projected mission demands. In addition to the National Environmental Policy Act (NEPA) review of the Department's nuclear research facility infrastructure, including the potential role of the Fast Flux Test Facility, the independent Nuclear Energy Research Advisory Committee is preparing a long-term nuclear energy research and development plan and an infrastructure roadmap. When these evaluations are complete, the Department will be in a position to make infrastructure decisions based on well-defined needs and capabilities.

QUESTIONS SUBMITTED BY SENATOR MITCH MCCONNELL

DEPLETED URANIUM HEXAFLUORIDE

Question. Mr. Magwood, you are probably aware that USEC is preparing to layoff 825 workers at the gaseous diffusion plants. It is my understanding that your office has control over $10 million in funds that have been obligated to cylinder maintenance between fiscal year 2002–fiscal year 2010. This level of funding would be more than sufficient to provide these basic benefits.

Is there any reason why this funding can't be used immediately to provide a voluntary reduction-in-force benefits package? What about worker health testing or accelerating cleanup?

Answer. The $10 million identified in the question is part of a balance of $66 million received from the United States Enrichment Corporation (USEC Inc) under a Memoranda of Agreement (MOA) under which the Department voluntarily accepted responsibility from USEC for management and disposition of some 11,000 cylinders of depleted uranium hexafluoride. This arrangement was a "work for others" transition and the money the Department received from USEC for conducting this activity was "miscellaneous revenues" that are appropriated annually to the Department, enabling the Department to retain and use those revenues in the general fund of the Treasury as miscellaneous receipts. Thus, we concluded that under current law, the Department must use those amounts just for the purpose they were received from USEC.

The Department has worked closely and actively with USEC to formulate programs under which we can mitigate the effects on workers of anticipated USEC workforce reductions (now estimated by USEC to be 625 positions rather than the earlier estimate of 825 referenced in the question). Those efforts have included the recent redirection of other appropriations balances to enhance voluntary separation benefits from amounts available for worker and community transition accounts.

Question. I have a budget document that was prepared by your cleanup contractor that states that at the end of fiscal year 2001, the cylinder management program will have an uncosted balance of $9.2 million between Paducah and Portsmouth.

How do you explain this and why are you requesting such a massive increase if the contractor won't be able to spend this amount of funding?

Answer. As part of the budget formulation process for the uranium programs' fiscal year 2001 budget request, various funding scenarios were developed for allocation of funding among Paducah, Portsmouth, and the East Tennessee Technology Park by the management and integration contractor. Although the Office of Nuclear Energy, Science and Technology is not familiar with the budget document cited in this question, we are familiar with a scenario that maximized cylinder maintenance at Paducah and Portsmouth, and resulted in a somewhat lower uncosted balance. However, neither scenario is considered credible because of other program mandates that were not considered in the scenarios. As we proceed through the fiscal year 2001 appropriations process, the Department will continue to analyze options for allocation of limited funding to meet the numerous priorities of the program at the three sites. Regardless, we do not envision the allocation of the funding among the sites to result in a high uncosted balance in fiscal year 2001.

Question. Instead of wasting this funding on cylinder maintenance, where it obviously can't be spent, wouldn't it be better applied to the cylinder conversion program to eliminate the threat?

Answer. Although the Department is committed to addressing the final disposition of the depleted uranium hexafluoride (DUF_6) inventory in an expeditious manner and is proceeding with plans for a project to build and operate conversion facility, maintenance of the inventory will be required in the interim and throughout the duration of conversion facility operation. The significant increase requested in the President's fiscal year 2001 budget will enable us to rectify funding shortfalls in surveillance and maintenance in prior years.

As you know, for decades as the Department continued its uranium enrichment program, it filled large steel cylinders with DUF_6. This material, which results from the enrichment of uranium for commercial nuclear fuel or defense purposes, if properly maintained, has and can be stored safely for decades without causing a hazard to workers, the public, or the environment. However, proper maintenance of the inventory was neglected in prior years, resulting in cylinders that were stacked in a less than optimal manner and often in direct contact with the ground.

Over the last seven years, DOE has taken positive steps to address this situation, putting a comprehensive program in place to maintain and monitor the inventory pending its disposition. These management activities are consistent with consent agreements involving the states and with the Defense Nuclear Facilities Safety Board (DNFSB) recommendations. In fact, last December, the DNFSB notified DOE that the Board considers the recommendation closed because the Department had met all of the relevant commitments. In large part, the Board's conclusions were based on the maintenance and surveillance program put into place as well as the fiscal year 2001 budget request, which with about $4 million more than this fiscal year, will rectify prior funding shortfalls and will enable us to manage the inventory in a manner that protects workers, the public and the environment.

DOE MATERIAL STORAGE AREAS (DMSAS)

Question. I noticed that budget funding for the management of the 148 DOE material storage areas (DMSA) was reduced by 16 percent, yet the Phase I Report identified 11 of the 148 sites pose a criticality threat. How do you justify a budget reduction?

Answer. The funding reduction in fiscal year (FY) 2001 is the result of accelerating the characterization schedule for the 13 critical DMSAs in fiscal year 2000. The Department reprioritized activities in fiscal year 2000 to fund the urgent work to address questions about potential criticality concerns in the 11 DMSAs that were identified in the Environmental, Safety and Health Phase 1 Investigation Report and another 2 DMSAs subsequently identified by the Office of Nuclear Energy, Science and Technology.

Characterization of these DMSAs is proceeding, with completion expected by July 2000. As such, no increase in funding is required in fiscal year 2001.

Question. Why aren't these projects being cleaned up?

Answer. While there are 148 DMSAs on the Paducah site, only 13 have been identified as high priority for near-term action due to a potential for nuclear criticality concerns. Until recently, the strategy for management of the DMSAs at the Paducah and Portsmouth sites had been to take action as needed to maintain the materials in a safe configuration, pending final shutdown of the gaseous diffusion plants. This

approach was based on the recognition that some of the material and equipment represented a potential strategic benefit to the Government or USEC. Further, it was considered more cost-effective to postpone disposition of the materials in the DMSAs to the time in which the overall decontamination and decommissioning of the facilities was performed.

However, we are currently evaluating options for accelerating characterization of the DMSAs, and where appropriate, for transferring radioactive, hazardous and other waste identified in the DMSAs to the Office of Environmental Management for disposition. A characterization and disposition plan for the DMSAs at Paducah is under development and expected to be completed in the first quarter of the next fiscal year. However, that material and equipment that is of potential strategic benefit to the Government and USEC will continue to be retained in a safe configuration, pending its final disposition.

DEPLETED URANIUM HEXAFLUORIDE CYLINDER MANAGEMENT

Question. In testimony before the Energy Committee two weeks ago, you claimed that your office has met the standards set by the Defense Nuclear Facility Safety Board (DNFSB) Recommendation 95–1 for depleted uranium cylinder management and you are confident that the program has resolved the cylinder storage problems. If you are in full compliance, how do you justify a 30 percent increase in your budget for the cylinder maintenance program at Paducah?

Answer. As the Department produced more and more depleted uranium hexafluoride over the years, it stacked cylinders in less than an optimal manner, often storing cylinders too closely together and some of the cylinders were in direct contact with the ground, resulting in corrosion. Over the last several years, DOE has taken positive action to address this situation. We put in place a comprehensive program to maintain and monitor the inventory pending its disposition. As a part of our commitment to the Defense Nuclear Facility Safety Board's Recommendation 95–1, Improved Safety of Cylinders Containing Depleted Uranium, we established a cylinder management program that requires continuous oversight to maintain the integrity of the cylinders through a systems engineering process. In December 1999, the DNFSB notified DOE that the Board considers the recommendation closed, because the Department has met all of the relevant commitments. In particular, the Board recognized DOE's efforts to develop a workable and justifiable cylinder management program and our commitment to continuing with cylinder maintenance as part of the accelerated conversion program.

The President's fiscal year 2001 budget request provides $16.6 million to maintain the cylinders, about $4 million more than was appropriated this year. Because of funding shortfalls in previous years, this increase is needed to enable us to follow through on commitments made to the States and DNFSB and is important to the safe and efficient management of the inventory in a manner that protects workers, the public and the environment. The increase in funding reflects our continued efforts to come into full compliance with the requirements of the plan approved by the DNFSB, particularly in the areas of cylinder painting and disposal of empty cylinders.

Question. Mr. Magwood—the Programmatic Environmental Impact Study on the depleted uranium conversion facility specifically stated, "depleted UF_6 produced as a result of uranium recovered from spent nuclear fuel would not be expected to contain appreciable amounts of transuranic radionuclides." (Page 3–16, April 1999)

Do you stand by this statement?

Answer. Last summer when concerns were raised about the introduction of recycled uranium feed materials, the possibility that the DUF_6 inventory could be contaminated with transuranic materials was identified as an issue requiring additional evaluation. A review of the historical data regarding the inventory, conducted last year, did not yield sufficient information to enable us to assure that future workers would be adequately protected. Because of this, we are proceeding this year with additional sampling of representative cylinders, dating back to the years in which recycled uranium was processed. This will enable us to obtain a clear understanding of whether the contaminants present in the cylinders will impact the design of conversion facilities or worker safety programs at the proposed conversion facilities. The sampling will be completed this year, the results of which will be used to finalize the DUF_6 conversion project Request for Proposals (RFP).

Based upon preliminary samples, we believe that whatever the specific levels of contamination are they will not be appreciable enough to have a significant impact on the design, construction or operation of the conversion plants. However, it is important that we complete our current analysis and sampling so that sufficiently detailed information can be used in the design of the conversion plants and provide

the confidence we need to allow contractors to bid on a contract for conversion plants.

Question. Why didn't the Department ever disclose this information in its Plan for Conversion or the Record of Decision that were delivered to Capitol Hill prior to the Washington Post story?

Answer. The Final Plan for the Conversion of Depleted Uranium Hexafluoride was completed in July 1999, and delivered to Congress. The concerns regarding use of recycled uranium feed were not raised until last summer, and our analysis of this concern was initiated in August. The final results of that analysis will not be available until near the end of this summer. Therefore, no data were available for inclusion in either the plan or the Record of Decision last year. However, as stated in the response to the previous question, we do not believe that the levels or the extent of contamination are significant enough to have impacted either the Plan or the Record of Decision.

Question. Earlier this year, the U.S. Army completed its analysis of the depleted uranium armor provided from the Department of Energy's depleted uranium stockpiles to determine if the transuranic contamination posed a threat to U.S. soldiers. Thankfully, the Army's evaluation found that the trace amounts of contaminants were within acceptable limits.

Are your findings consistent with those of the U.S. Army?

Answer. We will not have the final results of our analysis of transuranic contaminants until later this year; however, we anticipate that the level of such contaminants will not pose a health or safety concern to workers or the public in properly designed conversion facilities.

Question. I find it astounding that the Army, which only recently learned about the contamination, has completed its inspection; while your office has tested only four cylinders despite having full knowledge of the transuranic contamination. Why is taking so long?

Answer. There are nearly 50,000 cylinders in the Department's inventory. Determining which of those cylinders should be sampled has involved an extensive and time-consuming search of sometimes incomplete records, development of a sampling plan that balances cost against expected gain, peer review of that sampling plan, and modification of procedures to permit sampling using USEC leased autoclaves. Finally, conducting sampling and analyzing the results has also been time-consuming.

Since December 1999, the Department has sampled six depleted uranium hexafluoride cylinders all of which were filled after 1989—two from Paducah, three from Portsmouth, and the "heels" from an empty cylinder at Paducah. Of the six, we are awaiting analysis of results or confirmation of the analytical results. Additionally, we are in the process of sampling two uranium hexafluoride "feed" cylinders from Paducah containing recycled uranium generated from processing reactor return material. The Department plans to empty these "feed" cylinders and sample the "heels." Finally, we are evaluating approaches to obtaining samples from up to 12 additional depleted uranium hexafluoride cylinders at Paducah generated during the years in which recycling occurred. We are progressing with these activities and expect to have the results later this year, providing us a better understanding of the contaminants so that the final Request for Proposals can be issued this October.

Question. DOE issued a Final Plan and a Programmatic Environmental Impact Statement for the depleted uranium conversion facilities at Paducah and Portsmouth. These documents describe a conversion plan with an estimated lifespan of nearly 25 years and an estimated cost of $2 billion. The plan envisions converting this material either to uranium oxide, uranium metal or a combination of both.

What form does the Department prefer this material be converted to for disposal?

Answer. The Department believes that acceptable disposal paths exist for any of the product forms identified by the respondents to our request for expressions of interest. The Source Evaluation Board has not yet finalized a strategy on whether the Department should specify the final product form in the Request for Proposals or leave the product form open to potential bidders.

Question. Your office has proposed beginning construction by 2003 and operations to begin by 2005. What assurances can you give me that you will meet this schedule?

Answer. The Department remains committed to dealing quickly and effectively with its depleted uranium hexafluoride inventory and to meeting the goals, objectives and requirements of Public Law 105–204. The President's fiscal year 2001 budget requests $12 million for the depleted uranium hexafluoride conversion project; an amount that we plan to match with an additional $12 million from funds obtained under the Memoranda of Agreement with USEC, bringing the total to $24 million in fiscal year 2001. Another $12 million is reserved for the conversion project

and related activities. This funding will keep the project on track to issue the final Request for Proposals in October 2000, award a contract early next year and begin design in fiscal year 2001. Our budget request for fiscal year 2001 keeps the Department on schedule to meet the start of construction in 2003 and the start of operations in 2005.

Question. How much material is expected to be converted and what are the expected uses of this converted material? Where will this material be stored for the long term?

Answer. There are about 700,000 metric tons of depleted uranium hexafluoride stored in cylinders at Paducah, Kentucky; Portsmouth, Ohio; and Oak Ridge, Tennessee, which we plan to convert. The Department has prepared a roadmap for developing beneficial uses of depleted uranium products. Other than for the fluorine, no uses have been identified for the depleted uranium that would be required in the short-term future. However, we believe that there may be uses for the material in the longer term future. To more fully explore this option, the Department is initiating domestic research projects and is exploring collaborative research opportunities with the international community to define uses for the depleted uranium product.

Question. The documents state that unused conversion products will require disposal. What does DOE mean by "unused conversion products?" Where will DOE disposal of the unused conversion products? What are your alternatives?

Answer. If an end use is identified for the conversion product, any material produced in excess of that need will require disposal. Although no decision has been made relative to disposal of unused conversion products, the Nevada Test Site, other DOE sites, and commercial low level waste disposal sites are among the options that would be available to the Department.

Question. What are the impacts of the depleted uranium conversion facilities at Paducah on the sites cleanup schedule? Has the Office of Nuclear Energy coordinated with the Office of Environmental Management to address the potential impacts of cleaning the site? If so, what has been the result of this coordination?

Answer. The Office of Nuclear Energy, Science and Technology and the Office of Environmental Management have established a working group, with participation by DOE's Offices of Policy, Worker and Community Transition, and General Counsel, to develop an integrated plan to guide the completion of all non-United States Enrichment Corporation (USEC) activities occurring at the gaseous diffusion plants (GDP) sites.

The integrated plan will be completed this summer, and will serve as a living document to reflect the Department's plans for addressing our responsibilities at the GDP sites. The plan will provide cost and schedule estimates for all of the DOE activities at these sites: conversion of the inventory of depleted uranium hexafluoride; management of DOE Material Storage Areas; decontamination and decommissioning of excess facilities, eventually including those currently leased to USEC; waste management, remedial actions; and the final end state for the GDP sites. The plan will also take into account the impacts and uncertainties associated with GDP transition, funding levels, labor issues, and regulatory and stakeholder priorities.

Question. Where do you envision locating the two conversion facilities and what has your office done to prepare the sites?

Answer. Consistent with the Final Plan for Conversion of Depleted Uranium Hexafluoride issued in July 1999, and subject to the availability of appropriations, the Department plans on constructing two conversion facilities, one each located on the Paducah, Kentucky and Portsmouth, Ohio sites. As part of the acquisition process, in order to provide information to potential bidders, site characterization data is being developed for both sites and will be completed this fiscal year. Additionally, the Department is planning to request funding for fiscal year 2002 for site-specific preparation activities.

Question. What are the funding requirements over the projected 25-year period of operation? What contracting approach do you envision using to construct and operate these two facilities?

Answer. The total life cycle cost for the depleted uranium hexafluoride (DUF_6) conversion project is under review; however, the current estimate ranges from $1.731 billion to $4.920 billion, which was reported in the Department's fiscal year 1999 Accountability Report. An independent cost estimate is being prepared for this project, to be completed this summer.

Further, the Deputy Secretary has established a DUF_6 working group of procurement, program, and other experts from within the Department to develop the Management and Acquisition Strategy Plan to be utilized to guide the contracting approach for the final request for proposals.

Question. What are the implications if the Governors of Kentucky, Ohio and Tennessee decided to regulate the cylinders as waste under the Resource Conservation and Recovery Act?

Answer. The Department's position with regard to depleted uranium hexafluoride is that it is a source material as defined by the Atomic Energy Act, and not a waste. The Resource Conservation and Recovery Act (RCRA) excludes source material, special nuclear material, and by-product material from regulation under RCRA (40 CFR 261). Depleted uranium hexafluoride, as a chemical compound of uranium and fluorine, is a chemical form of uranium, and thus, a source material. Further, as none of the Department's depleted uranium hexafluoride has been mixed with other materials that are regulated under RCRA, it is the Department's position that the material is excluded from RCRA definitions of solid and hazardous waste. A decision to regulate the material under RCRA would significantly impact the cost of storing and managing the material, potentially ranging into the billions of dollars.

Question. The Decommissioning and Decontamination Fund was created to fund the removal and cleanup of the nation's three gaseous diffusion plants in Oak Ridge, Tennessee, Paducah, Kentucky, and Piketon, Ohio. Nuclear utility companies contribute to this fund. The Department of Energy estimated in 1998, it could cost 10.7 billion to remove and cleanup the three plants. Is there any prohibition on the use of D&D funds to deal with the conversion of the depleted uranium cylinders?

Answer. There is no prohibition in the Energy Policy Act of 1992 on the use of the Uranium decommissioning and decontamination (UE D&D) fund for the conversion of the depleted uranium cylinders. Traditionally, the UE D&D fund has been used to support cleanup activities at the three uranium enrichment facilities, including environmental restoration, waste management, and decontamination and decommissioning work, as well as, reimbursements to uranium and thorium licensees under Title 10.

DEPLETED URANIUM HEXAFLUORIDE

Question. Mr. Magwood, when I drafted Public Law 105–204, I established a timetable that would give the Department more than enough time to implement this legislation. Unfortunately, my lowest expectations for the Department have been exceeded. I am very skeptical that the budget offered by the Secretary is sufficient to keep this project on track and able to meet the timetable you have set forth. In fact, it is my understanding that this budget only provides enough funding for your office to complete one-third of the total design work for the facilities. Based on information from project experts, as well as information from your office, at least $60 million is needed to keep this project on track. Further, I am disappointed the Secretary offered only $12 million of the available $24 million that he had committed to provide last year.

Has the Secretary withdrawn his commitment on this project?

Answer. The Secretary remains committed to meeting the target date anticipated by Public Law 105–204 to begin construction of the conversion facilities not later than January 31, 2004. We believe that the funding requested in the Administration's budget request will allow us to meet and maintain this schedule.

Question. What will the Department do with the remaining $12 million in funding that hasn't been obligated?

Answer. The Department is proceeding with plans for a project to design, build and operate conversion facilities at Paducah and Portsmouth that will convert the inventory of depleted uranium hexafluoride to a more stable form. As part of the Administration's budget request, we are proposing to apply $12 million to the depleted uranium hexafluoride conversion program in fiscal year (FY) 2001. Further, we plan to use an additional $12 million from funds obtained under a Memoranda of Agreement (MOA) with the United States Enrichment Corporation (USEC Inc), bringing the total to $24 million in fiscal year 2001. This will enable the Department to issue the formal DUF_6 conversion project Request for Proposals to the private sector by October 2000 and to initiate design activities in fiscal year 2001. We anticipate applying the remaining $12 million of the USEC Inc MOA funding, along with additional appropriations in fiscal year 2002 and beyond to maintain this schedule.

Question. Mr. Magwood, you informed my staff in a meeting last month that transuranic waste was found in depleted uranium cylinders generated in 1988 and 1993. If the Atomic Energy Commission stopped using recycled uranium during the mid-1970's, how do you explain the fact that this material was found in those cylinders 10 to 15 years later?

Answer. The Government ceased processing its recycled uranium in the mid-1970's. During the fiscal years 1986 through 1989, a small amount of recycled ura-

nium was received by the Department from the French Company Comurhex, which was introduced to the diffusion cascades during that time frame. We suspect the transuranic materials found in some of the cylinders resulted from the French recycled uranium.

Question. How much funding will this project require annually in order for the Department to fulfill its legal obligations to have two conversion plants operational by 2005?

Answer. We will go out with an RFP in October, and once a contract is awarded, the Department will be in a better position to provide annual cost estimates. Prior to that time, all cost estimates by any source, including informal staff estimates, are procurement sensitive. Any estimate made public at this time could influence the responses that we hope to get from prospective bidders.

We will provide Congress with the annual costs as soon as numbers are available for release.

QUESTIONS SUBMITTED BY SENATOR LARRY CRAIG

NUCLEAR ENERGY BUDGET REQUEST

Question. In the budget request, DOE recommended that the name of the Termination Costs budget line be changed to "Nuclear Facilities Management." Can you discuss the reasons for this recommendation?

Answer. Three components make up the Termination Costs or "Nuclear Facilities Management" program: infrastructure, facility termination activities, and technology activities. The infrastructure is required to satisfy safety, security, and environmental requirements; maintain facilities in a user-ready status with a capable, knowledgeable well-trained core staff; and provide support functions for the ongoing program work. It also includes operation of facilities not related to facility termination activities such as the storage and protection of facilities housing special nuclear materials. Facility termination activities consist of placing the EBR–II in a radiologically and industrially safe condition and deactivating associated facilities. It also includes the treatment of sodium-bonded spent nuclear fuel that was used in the reactor, which is performed in the Fuel Conditioning Facility. Technology activities provide for technical support for sodium-bonded spent nuclear fuel treatment by developing and testing waste stream treatment process equipment of a scale suitable for inventory treatment. It also involves conducting long-term tests to characterize performance of reference waste forms and gain Nuclear Regulatory Commission approval for placement of metal and ceramic waste forms in a geologic repository.

The majority of the fiscal year 2001 and future year funds that will be used in this budget line will involve nuclear infrastructure and technology activities. Therefore, we believe that a more representative title for this budget item is "Nuclear Facilities Management."

Question. Can you provide a summary of the Department's objectives for closing the Experimental Breeder Reactor-II and treating EBR–II spent fuel?

Answer. EBR–II was a research and test reactor at Argonne National Laboratory-West used to demonstrate the engineering feasibility of the sodium-cooled, liquid metal reactor with a steam electric power plant and integral fuel cycle. It operated from 1964 through 1994 and upon mission completion in 1994, it was shut down.

EBR–II spent nuclear fuel contains metallic sodium. Metallic sodium reacts vigorously with water, producing heat, potentially explosive hydrogen gas, and sodium hydroxide, a corrosive substance. Metallic sodium is also pyrophoric. The current repository waste acceptance criteria exclude reactive and potentially explosive materials from being accepted into a geologic repository unless they exist in only trace quantities. In order to satisfy the waste acceptance criteria, the sodium, which is bonded to uranium metal alloy within the fuel cladding must be further treated in order for it to be removed from the spent fuel.

UNIVERSITY REACTOR FUEL ASSISTANCE AND SUPPORT

Question. DOE has proposed $12 million for the university program in fiscal year 2001, the same as was appropriated for fiscal year 2000. This program is essential to ensuring an adequate supply of nuclear-trained professionals for the nuclear power industry, the national laboratories, the environmental restoration industry, and a host of other industries. This program also provides funding to support the operation of more than two dozen university-based nuclear research reactors in the U.S. Given the importance of university nuclear engineering programs and univer-

sity research reactors to maintaining the viability of nuclear power in the U.S., do you believe the requested funding level is adequate?

Answer. The Department has requested $12 million for the University Reactor Fuel Assistance and Support Program for fiscal year 2001 which is the same funding level appropriated for fiscal year 2000. At this funding level, the Department will continue to provide critical assistance to the Nation's university nuclear engineering programs as they educate and train the next generation of nuclear engineers and scientists. University research reactors are a vital component of our national research and education infrastructure. Many university research reactors support the development of highly qualified, technically knowledgeable personnel needed by national laboratories, private industry, the Federal government, and academia. Through the Department's Reactor Sharing program, the university research reactors also serve as centers for education programs offered to other colleges and universities and high school students and teachers who visit the reactors for instructional programs and research.

To help ensure the continued success of the university nuclear engineering programs, the Department provides assistance through activities such as the DOE/Industry Matching Grants program which leverages public sector funds with private contributions in a 50/50 cost share arrangement. Fiscal year 2000 marked the first year that this program's private sector funding exceeded DOE's ability to match it. The Department also provides academic assistance to outstanding students through our Scholarships and Fellowships program with a new dimension in fiscal year 2000 and fiscal year 2001 that supports students at minority institutions in achieving a nuclear engineering degree at a university with a nuclear engineering department. We continue to receive more applications from outstanding graduate and undergraduate students than we, typically, can support. However, the requested level of funding is adequate to maintain our participation at its current level.

With respect to the future direction of this program, the Department's Nuclear Energy Research Advisory Committee (NERAC) has convened a Blue Ribbon panel, led by Dr. Michael Corradini of the University of Wisconsin, to consider the best ways of preserving our irreplaceable university nuclear education infrastructure. This panel is evaluating the future of university research reactors and their relationship to the national laboratories in conducting nuclear engineering research. The recommendations of this panel, expected this Summer, as well as other NERAC reviews related to university programs will serve as a basis for recommending the priorities and funding needs for this program in the future.

REPROGRAMMING

Question. Your office took approximately $1.8 million in fiscal year 2000 funds from the TRA landlord program in Idaho to help pay for a $9 million reprogramming for the FFTF at Hanford surveillance and maintenance. The fiscal year 2001 request for TRA landlord is increased by only $97,000 compared to the fiscal year 2000 appropriation of $8.9 million. Do you plan to restore to Idaho the remaining amount of the $1.8 million taken from TRA in fiscal year 2000?

Answer. The impact to the TRA Landlord scope of work from the reprogramming request has been to defer for up to one year, the Retention Basin System upgrade and the purchase of new portal monitors for radiation detection and one motorized man lift used to repair equipment. The Department plans to proceed with this project and the equipment procurements during the fiscal year 2002 budget cycle.

QUESTIONS SUBMITTED TO THE OFFICE OF SCIENCE

QUESTIONS SUBMITTED BY SENATOR PETE V. DOMENICI

SUPERCOMPUTING

Question. Dr. Decker, across the Department, $908 million is targeted for the Information Technology Initiative. $182 million of this program resides within the Office of Science in the Advanced Scientific Computing Research program.

This is in addition to $726 million associated with the National Nuclear Security Agency's (NNSA's) Advanced Strategic Computing Initiative. That program has demonstrated significant improvements in computational power, both in hardware and software.

Are these two major Departmental efforts in high performance computing benefiting from each other's research and capabilities?

Answer. The total fiscal year 2001 funding requested by the Department for the Information Technology (IT) research initiative is $667 million of which $477 million

is in NNSA's Advanced Strategic Computing Initiative (ASCI) and $190 million is in the Office of Science. Of the proposed investments in the Office of Science, $170 million is in the Mathematical, Information and Computational Sciences (MICS) subprogram of the Office of Science's Advanced Scientific Computing Research program, and the remaining $20 million is distributed across the other programs in the Office of Science ($2 million in Basic Energy Sciences, $8 million in Biological and Environmental Research, $3 million in Fusion Energy Sciences, and $7 million in High Energy and Nuclear Physics).

Investments in high performance computing research in NNSA and SC have been and will continue to be managed so that they take maximum advantage of each other. Basic research in applied mathematics supported by SC underpins many of the mathematical software libraries that are critical to NNSA's applications. Many of these same libraries are used by scientists supported by SC on unclassified computers to help solve problems in the science of materials, folding of proteins, plasma turbulence and understanding the fundamental structure of matter. In addition, for a number of years SC and NNSA have cofunded activities such as the Advanced Computational Testing and Simulation (ACTS) Toolkit to pioneer new ways of creating high performance parallel applications more quickly. We expect both the collaborative funding on common problems and the two-way exchange of technology and research to continue in the future.

Question. Please discuss how these two programs within the Department are coordinated? Are advances in the NNSA being carefully evaluated in the Office of Science program, and vice versa?

Answer. The two research programs are coordinated through ongoing direct interactions of the staff at DOE who are charged with managing these efforts. There are regular and ongoing discussions between the staff in MICS and the Associate Director for SC's Advanced Scientific Computing Research program and the staff in NNSA who are responsible for ASCI. In addition, staffs from both organizations regularly attend each other's Principal Investigator meetings and planning meetings and sit on each other's review panels. Finally, SC funds significant basic information technology research efforts at NNSA laboratories, and encourages its researchers to collaborate with researchers at NNSA laboratories on common problems. Yes, advances in both organizations are carefully evaluated.

Question. What is the five-year plan for the ASCR program?

Answer. On March 24, 2000, the Office of Science delivered to Congress its five-year plan, Scientific Discovery through Advanced Computing, which describes the investments across SC including those in its ASCR program. A copy of the plan is provided for the record.

FUSION ENERGY SCIENCES

Question. The Secretary of Energy Advisory Board report on the Department's fusion program recommended a funding level of approximately $300 million for fiscal year 2001. However, the Department has only requested $247 million.

Why is the Department not supportive of the fusion program funding level recommended by the Secretary's own advisory board?

Answer. The fusion energy sciences program is a multi-purpose scientific research effort providing the science base for a fusion energy option in the long-term and producing valuable scientific knowledge and technological benefits in the near-term. The Secretary's Advisory Board's recommended funding level was arrived at without consideration of other Office of Science or Departmental budget constraints. Given the program's current mission and its focus on plasma science and fusion science, the Department feels that the current funding level is appropriate within the overall Office of Science budget constraints. However, the Department recognizes and is most appreciative of the strong support that the advisory committees and the Congress have provided for the restructured Fusion Energy Sciences Program, and it will give careful consideration to the requirements of this program in formulating future budget requests.

SPALLATION NEUTRON SOURCE

Question. Dr. Decker, the funding request for construction of the Spallation Neutron Source (SNS) for fiscal year 2001 is $281 million. Explain how the project has been restructured. What were the reasons for the restructuring?

Answer. In the Spring of 1999, the management of the SNS project was significantly strengthened by assigning a new leader, Dr. David Moncton, with recent experience in building a large scientific research facility (the Advanced Photon Source). As SNS Executive Director, Dr. Moncton immediately assembled a team of experts who completed a thorough assessment of the project and developed a plan

for its completion. During the next few months, Dr. Moncton reorganized the SNS Project Office at Oak Ridge, proceeding to fill all of the project's senior management positions with experienced personnel, and fully integrated and optimized the SNS technical design to provide maximum scientific capability within cost constraints. In addition, a number of management improvements were implemented that strengthened the authority of the SNS Executive Director and the central SNS Project Office over the project's staff at the six partner laboratories. Business and project management systems were improved to better support construction activities.

This restructuring resulted from the recommendations of a January 1999 DOE Office of Science review of SNS, and served to meet certain funding language in the House report accompanying the fiscal year 2000 Energy and Water Development Appropriations Act.

Regarding the $281 million request for the SNS, please note that as a result of legislation passed by the Tennessee legislature that excludes the SNS from Tennessee sales and use taxes, the fiscal year 2001 requirement is reduced by $2.5 million to $278.5 million.

Question. What assurances can you give the committee that the project can now proceed and be completed on schedule and within the current cost estimate?

Answer. The DOE managers in the Office of Science and at the Oak Ridge Operations Office who are responsible for the SNS have overseen the successful construction of several similar projects. Given their collective experience, I am very confident in their abilities to deliver the SNS on time and within cost. Please note that it was their prompt action in early 1999 that brought about the contractor management changes and project restructuring that have been credited with putting this project back on track.

Since the beginning of this restructuring period, there have been two DOE Office of Science reviews (in July 1999 and March 2000), and a congressionally mandated Independent External Review, performed by Burns and Roe during the Fall of 1999. All of these reviews by outside experts have concluded that the SNS can be completed on time and within budget. In the case of the most recent review (March 2000), the review committee's report stated: "Overall, the Committee judged that the SNS project is making good progress thanks to an extremely competent and experienced management team . . . Together with their staff, they have demonstrated clear ownership of all technical, cost, and schedule aspects of the project. The cost and schedule information presented to the Committee adequately supports the President's fiscal year 2001 Budget Request, and the Committee expressed confidence that the project can be successfully completed as planned by June 2006 and within a Total Project Cost of $1,411.7 million (as spent)."

Question. Are there any technical, engineering, management or scientific issues that remain that could impact successful completion of the project?

Answer. Apart from any uncertainties in future annual funding levels, there are no known issues that are likely to impact the successful completion of the project. Although the SNS will be the first spallation source to use a liquid mercury target, this is judged to be a moderate technical risk which is being addressed by an ongoing research and development program. Results to date indicate that the SNS target will be able to meet its designed performance objectives.

NANOSCALE SCIENCE, ENGINEERING AND TECHNOLOGY

Question. Dr. Decker, I've seen some of the exciting work on nanotechnology that is ongoing at our national security labs. I appreciate that nanotechnologies may revolutionize our ability to craft highly specialized materials with unique properties. I'm pleased to see the Department undertake this program.

The Administration has requested approximately $84 M, an increase of $36 M, in the Office of Science to fund the science and technology of this new field. Government wide, the budget requests $495 M. I understand the funding is spread over the National Science Foundation, Defense, Energy, Commerce, NASA and NIH.

Why are so many agencies involved in this research area, and can the program be effectively managed over 6 independent agencies?

Answer. Many agencies are involved because nanoscale science affects science and technology broadly. Nanoscale science is important to the Department of Energy because the Department is the largest supporter of materials sciences and chemical sciences in the Federal government. This area is one which the Department helped pioneer because of its fundamental importance to the physical sciences for which the Department provides the most support among all of the agencies. The Department is also interested because with a better understanding of nanoscale science we can (1) improve catalysts for energy conversion, (2) improve photocells and photochemical solar energy conversion, (3) make better, lighter composites, (4) make

much better and more sensitive sensors, and (5) improve the safety and reliability of the nuclear weapons stockpile. NSF is interested in nanoscale science because of its importance to fundamental science. NASA is interested in the development of nanotechnologies because it will significantly reduce the weight of satellites and space vehicles. DOD is interested in the nanotechnology effect on weapons and communications system. The DOC is interested in nanoscale science, through the National Institute of Standards and Technology, because of the problems that need to be addressed related to measurement technology and development of standards. NIH has many potential applications for nanotechnology, including drug delivery, diagnostics, and protective coatings for prosthetics.

For over a year, the agencies have been working together through the National Science and Technology Council's Interagency Working Group on Nanoscience, Engineering and Technology. This Working Group has developed an extensive and comprehensive document detailing the priority areas for the initiative. Each agency agreed to these priorities. The priorities are both relevant to the missions of the agencies and to the national effort that will expedite progress with the agencies working together rather than separately.

Question. Since the national security labs have considerable expertise and many applications for miniaturized systems and technologies, will the national security laboratories be participants in the Office of Science nanotechnology program?

Answer. From the beginning, the Office of Science's planning for the nanoscale science, engineering, and technology initiative has involved the national security laboratories. Researchers from these laboratories participated in the workshop that developed the Office of Science's programs and in preparing a report titled "Nanoscale Science, Engineering and Technology Research Directions," which is available at http://www.sc.doe.gov/production/bes/NNI.htm. The Department's Office of Science and the Office of Defense Programs have signed a memorandum of agreement to form a joint Office of Defense Programs and Office of Science Nanoscience Network to create synergistic collaborations among DOE laboratories. A joint Office of Defense Programs and Office of Science workshop was held on April 27–28 to establish this network. The network will operate very much like the Office of Science's Center of Excellence for Advanced Synthesis and Processing, which is run by Sandia National Laboratories, and involves the Department's laboratories (including the national security laboratories), industry, and universities. The Nanoscience Network is being organized now so that it can begin research promptly when the fiscal year 2001 starts in October should Congress appropriate the funding requested for the Nanotechnology Initiative.

MICROBIAL CELL PROJECT

Question. Dr. Decker, the budget request includes about $10 million to start the Microbial Cell Project.

Could you explain the objectives and potential applications of this effort?

Answer. The Microbial Cell Project is a coordinated research effort between the Biological and Environmental Research (BER) and Basic Energy Sciences (BES) programs. The goal of the Microbial Cell Project is to develop a comprehensive understanding of the complete workings of a microbial cell, starting from the DNA sequence (the molecular parts list), to the identification of all the genes, to the production of all the proteins whose assembly instructions are contained in the genes, to the complex interaction of the genes and proteins in a cell that gives the microbe its life and its unique characteristics and behaviors. The Microbial Cell Project will identify and characterize a minimum set of genes, proteins, and metabolic capabilities that are both necessary and sufficient for a microbe to survive in various extreme environments. Eventually we will understand the detailed workings of individual genes and proteins, regulatory networks of genes and proteins, and their integration into whole functional interactive cells. Instead of simply inserting genes that encode pollutant degrading enzymes into radiation resistant cells, we may be able to "tune" microbes (just as we tune lasers) to a desired degree of radiation resistance and pollutant degrading capability so that they are maximally useful for a given cleanup challenge. Similarly, microbes will be "tuned" for the cost effective production of methane or hydrogen, maximizing fuel production and minimizing the production of unnecessary wastes, or for the sequestration of excess atmospheric carbon.

Question. Can you tell the Committee what the total cost of this effort is expected to be? What are the annual out year costs for the program?

Answer. Funding for this project is requested as part of the Biological and Environmental Research (BER) and Basic Energy Sciences (BES) program budgets. Total funding for this initiative could be in the range of $325 million over ten years or

approximately $35 million per year after fiscal year 2001. Funding in fiscal year 2001 is requested at $12.5 million ($10 million for BER and $2.5 million for BES).

NEW "MOUSE HOUSE," OAK RIDGE, TENNESSEE

Question. Dr. Decker, the budget request includes funding for construction of a new facility to house and protect the genetic mice at Oak Ridge in Tennessee.

Dr. Decker, can you explain to the committee the nature of this project including the importance of these mouse populations to research? What are the overriding programmatic reasons for replacing the facility?

Answer. The Laboratory for Comparative and Functional Genomics (LCFG) will provide a modern gene function research facility to support Department of Energy research programs and provide protection for the genetic mutant mouse lines created during the past 50 years. The LCFG will replace the deteriorated mouse-housing facility located at the Y–12 Weapons Plant on the Oak Ridge Reservation to meet these programmatic needs. It will accommodate the entire DOE live mutant mouse colony in Oak Ridge, which will be reduced in size by utilizing cryogenic preservation technology. The facility will be designed to permit the establishment of specific pathogen free colonies of mice making the mouse strains more widely available to the broader scientific community than has been possible with mice from the current facility. The principle programmatic reasons for constructing the new facility are to ensure adequate, cost effective housing for the national resource embodied in the mutant mouse colony to support the next phase of the Human Genome Program—the identification of gene function. It will support an important future direction of mouse and genomics research, the determination of gene function on a genome-wide basis. There are a number of complementary strategies being used by biologists today to understand gene function in the human using the mouse. These different strategies include the complete "knockout" of a gene's function, the introduction of genes into mice, and the induction of recessive mutations in large numbers of genes. A major focus and strength of the Oak Ridge National Laboratory mouse genetics group is the production of "recessive" mutants that cannot be directly observed without inbreeding for 3 generations. This approach can only be accomplished efficiently by breeding large colonies of mice. This important, but labor intensive, genetics strategy is not possible without high quality facilities like the LCFG. The fiscal year 2001 request for the facility is $2,500,000. The total project cost is $14,420,000.

Question. What is the condition of the facility where the current activities are housed? Are there other major drawbacks to current operations?

Answer. The building currently housing the animals has deteriorated with age and cannot be maintained cost effectively. An increasing fraction of the funds provided for research using the mice housed in this building need to be diverted each year to keep the facility operational. The building systems need to be upgraded to assure continued compliance with accreditation standards for animal research facilities. The facility nearly failed a final American Association for Laboratory Animal Care inspection several years ago that would have required either a complete shutdown of the facility or its operation without accreditation. In addition to being expensive to operate and maintain, the existing facility is classified as an "open" facility. That means the animals have not been derived from stocks that were free of specific pathogens. This has had a detrimental impact on the full utilization of the colony by the broader mouse genetics research community.

Question. What programmatic benefits will be realized if the facility is replaced?

Answer. A new mouse facility at Oak Ridge will be of programmatic value to the future of the DOE and the Nation's human genome programs because it will maintain, in a single location, valuable mice strains, expertise in mouse genetics, and technologies needed to conduct high-throughput mouse biology. The Department's functional genomics research facility at Oak Ridge includes a mouse colony that consists of approximately 70,000 live mice representing approximately 400 different genetic strains. In addition, approximately 375 strains are cryopreserved. These are currently not the subject of active investigation, but important for future genomics research. The cryopreservation will also allow the rederivation of these valuable mouse strains free of pathogens. The mouse colony is integral to the important part of the functional genomics research effort that is aimed at developing new ways to create and to genetically characterize new mutant strains of mice. These new strains serve both as important models of human genetic diseases and as tools with which to decode the functionality of the human genome as human DNA sequence becomes available. Several of these methodologies developed by Oak Ridge are also widely in use by research laboratories around the world. Discoveries resulting from this research program include identification of genes involved in obesity and cancer,

neonatal cleft palate, oculocutaneous albinism, and neonatal liver failure, polycystic kidney disease, serotonin metabolism disorders, and epilepsy, to name a few. In addition, the facility has been a key component of numerous studies on the effect of dose and dose rate of radiation on risk of genetic defects being passed on to future generations, including pioneering studies on individual variation in susceptibility to genetic damage induced by radiation and potentially toxic chemicals.

Question. Would it be possible to replace or reestablish this resource if lost or significantly damaged?

Answer. Some components of this resource could be reestablished in other locations. However, it would be nearly impossible to reconstruct the mouse genetics capabilities, mouse strains, and high throughput technologies for biological analysis that currently makes Oak Ridge a leader in mouse genetics and biology. While there are indeed private companies that provide mice for experimental purposes, the issue is not obtaining mice for experimental purposes, but rather a cost-efficient facility to perform the functional genomics experiments pioneered by the Department at Oak Ridge National Laboratory (ORNL). A major focus of the ORNL mouse genetics group is to produce "recessive" mutants (mutants that cannot be directly observed without inbreeding for 3 generations). This approach can only be accomplished efficiently by breeding large colonies of mice. There is no private company offering that capability. While it is a very important approach, it is not a profitable business model and that is why it is left to government funded projects such as the one at ORNL. As a result, several companies have expressed interest and are discussing collaborative research arrangements with ORNL to benefit from this unique research facility. Academic researchers, on the other hand, produce "dominant" mutants (mutants where the phenotypic effects can be easily observed in all the offspring). These dominant mutants can be bred and sold very economically and easily in private companies. Finally, the mouse colony is an integral part of the Department's functional genomics research facility. Private ownership of the research facility would result in intellectual property situations that impede quick dissemination of research results and scientific progress. The loss of this resource would be a major setback for biology and genomics at the DOE and nationally.

ADVANCED COMPUTING INITIATIVE

Question. Dr. Decker, the fiscal year 2001 budget includes a significant increase for Advanced Computing under the Office of Science. Explain why this enhanced scientific computing initiative is necessary.

Answer. This initiative is needed to enable scientists across all Office of Science (SC) programs to take full advantage of multi-teraflop computers as tools for scientific discovery. Within the past two decades, scientific computing has become a contributor to essentially all scientific research programs. It is particularly important to the solution of research problems that are (i) insoluble by traditional theoretical and experimental approaches, e.g., prediction of future climates or the fate of underground contaminants; (ii) hazardous to study in the laboratory. e.g., characterization of the chemistry of radionuclides or other toxic chemicals; or (iii) time-consuming or expensive to solve by traditional means, e.g., development of new materials, determination of the structure of proteins, understanding plasma instabilities, or exploring the limitations of the "Standard Model" of particle physics. In many cases, theoretical and experimental approaches do not provide sufficient information to understand and predict the behavior of the systems being studied. Computational modeling and simulation, which allows a description of the system to be constructed from basic theoretical principles and the available experimental data, are key to solving such problems. The increase provided for advanced computing under SC will provide investments to solve problems in core basic science research at DOE, such as the science of materials, folding of proteins, plasma turbulence, and the fundamental nature of matter. A more detailed plan is attached.

Question. How is it different from the Accelerated Strategic Computing Initiative (ASCI) in the Defense Stockpile Stewardship program?

Answer. The proposed initiative is different from ASCI because the applications are different and because the effort in SC supports the open scientific community. The computational modeling and simulation efforts in both the National Nuclear Security Agency (NNSA), i.e., the Accelerated Strategic Computing Initiative (ASCI), and the Office of Science (SC) are both focused on large scale scientific and engineering simulations. In the case of ASCI, the simulations are focused on complex nuclear weapons systems as a critical component of the Department's ability to guarantee the safety and reliability of the nuclear stockpile in the absence of testing. The ASCI program and its computers are fully dedicated to this mission. The investments in SC, however, cover a wide range of non-weapons related scientific

problems such as understanding the fundamental properties of magnetic materials; understanding the chemistry of complex molecules such as hydrocarbon fuels and nuclear waste products; understanding the physics of plasma turbulence and its impact on energy transport; and understanding the fundamental properties of nuclear matter. SC, through its Advanced Scientific Computing Research program, provides the computing and communications infrastructure to support these simulation efforts as well as the advances in the underlying software, computer science and applied mathematics which are required to enable scientists to make progress on this class of complex simulation problems.

The computing infrastructures to support NNSA must be separate because NNSA's investments are fully used in supporting its missions and because of the special security requirements of NNSA applications and programs. However, in the areas of software technology, computer science and applied mathematics many of the technical problems that arise are common. In this area, the investments in SC continue our long history of effective collaboration with research supported by ASCI.

Question. What is the total cost of this effort expected to be? What is the total amount requested in the fiscal year 2001 budget and how does that compare to the fiscal year 2000 level of funding?

Answer. The fiscal year 2001 estimated level of investment in the Office of Science in the Information Technology Initiative is $190 million of which $170 million is in the Mathematical, Information and Computational Sciences (MICS) subprogram of the Office of Science's Advanced Scientific Computing Research program and the remaining $20 million is distributed across the other programs in the Office of Science ($2 million in Basic Energy Sciences, $8 million in Biological and Environmental Research, $3 million in Fusion Energy Sciences, and $7 million in High Energy and Nuclear Physics). In fiscal year 2000 the comparable budget would be the budget for the MICS subprogram or $120 million. On March 24, 2000 the Office of Science delivered to Congress its five-year plan, Scientific Discovery through Advanced Computing, that describes in detail the investments across SC including those in its ASCR program. This plan was delivered to the Congress on March 24, 2000, and a copy is being provided for the record in response to the Committee's questions.

Question. What are the annual out year funding requirements expected to be?

Answer. As described in the five-year plan, the proposed plan will have significant accomplishments if the fiscal year 2001 level is continued in the outyears without further increases. However, there are significant opportunities for further benefits if additional funding were available.

Question. What elements of the ASCI program are transferable to the Office of Science Advanced Computing Initiative?

Answer. The principal element that is transferable from the ASCI program to the Office of Science initiative is the understanding that ASCI develops on how to use multi-teraflop class computers effectively. This builds on our long history of collaborating with ASCI on basic research in applied mathematics and computer science problems.

LOW DOSE RADIATION EFFECTS RESEARCH

Question. What is the Department's rationale for funding this critical program substantially below the Department's own program plan?

Answer. The fiscal year 2001 funds requested ($12 million) for this program are $5.5 million less than the amount appropriated in fiscal year 2000; however, DOE's fiscal year 2001 request is $2 million greater than its request in fiscal year 2000. In fiscal year 2000, DOE requested $10 million and Congress provided $19.5 million ($17.5 million for low dose research and $2 million for neutron dosimetry associated with the atomic bomb at Hiroshima). The difference between DOE's request in fiscal year 2001 and its appropriation in fiscal year 2000 reflects overall programmatic priorities in the BER program and across the entire Office of Science.

SPALLATION NEUTRON SOURCE

Question. Please summarize the current status of the Spallation Neutron Source.

Answer. Construction funding and associated design and procurement activities were initiated in fiscal year 1999 and continued in fiscal year 2000. The formal "Start of Construction" decision for the SNS was approved by the Department in November 1999, a groundbreaking ceremony was held, site preparation began, and major site excavation and grading to support civil construction has commenced. Preliminary design of technical systems and procurement of technical components is continuing. A new partner, Thomas Jefferson National Accelerator Facility has recently joined the project as a sixth partner lab to assist with a change in the linear accelerator design to incorporate superconducting technology. Design and construc-

tion management of the conventional facilities is being handled by a commercial architect engineer/construction management (AE/CM) team under a task order contract to Oak Ridge National Laboratory (ORNL). Research and development to reduce the moderate technical risk associated with the liquid mercury target is proceeding on schedule using the prototype facility constructed for this purpose at ORNL. In fiscal year 2001, design of all buildings will be complete and construction will begin. Major procurements will then be awarded for accelerator systems technical components.

Question. Are the five laboratories now working as one team toward the common goal of finishing the SNS?

Answer. Including the recent addition of the Thomas Jefferson National Accelerator Facility, the senior managers at all six SNS partner laboratories are fully committed to ensuring the successful completion of the project. Their specific responsibilities and commitments are defined in a revised inter-laboratory Memorandum of Agreement (MOA) between the SNS Executive Director and the laboratory directors. This MOA is a key part of the SNS Project Execution Plan, which has been approved by Secretary Richardson and is incorporated by reference in the laboratories' management and operating contracts.

WORKING WITH NNSA LABS

Question. The National Nuclear Security Administration started operation as a semi-autonomous agency within the Department on March 1. The NNSA labs of Los Alamos, Sandia and Lawrence Livermore have a long tradition of supporting a broad range of scientific initiatives beyond weapons activities. As the NNSA was created, I emphasized the importance of the NNSA labs continuing their multi-program support of the Department and other federal agencies.

The enabling legislation, in Section 3264, stated that: "The Secretary, in consultation with the Administrator, shall establish procedures to provide for the use . . . of the national security labs by elements of the DOE not within the Administration . . ."

Despite the legislation, I am concerned that the NNSA labs will not continue to receive high priority funding from the Department.

Will each of you assure me that you will continue to aggressively fund projects within the NNSA labs?

Answer. The NNSA Act allows the NNSA laboratories to continue to perform significant research for all DOE programs, for other federal agencies and non-federal organizations. It also permits the Department to continue the important role the NNSA laboratories have as part of the integrated laboratory system.

The Department recognizes that non-defense research is important to maintain the vital overall science and technology base and core competencies of the NNSA laboratories. Science support necessary to accomplish national projects is an important component of the interdisciplinary approach of all the laboratories, and it helps maintain and strengthen the multiprogram nature of the laboratories.

The Office of Science will continue to consider and fund outstanding research proposals submitted by NNSA laboratories and to ensure their capabilities are utilized in carrying out important multilaboratory collaborations.

I hope this adequately addresses the concerns you raise, and demonstrates that the Department is committed to maintaining a culture that permits the laboratories to continue this effective relationship. *Question.* Have discussions been initiated between your Office and NNSA to define mechanisms to maintain close collaboration, both for NNSA lab support to your Office and for your labs to support NNSA as required?

Answer. The Implementation Plan for the NNSA is structured to permit non-NNSA laboratories to continue to do both national security-related research and science. It also allows the NNSA laboratories to continue to perform significant research for all DOE programs. The laboratories are able to continue to work together efficiently and effectively to complement each others' expertise in important scientific collaborations that can benefit all Departmental programs, including the NNSA. While unexpected barriers may, of course, arise from time to time, we are in a position to address them and solve them within the implementation plan.

Question. Do you foresee any barriers to maintaining close working relations between your Office and the NNSA?

Answer. No. Non-defense research is important to maintain the vital overall science and technology base and core competencies of the laboratories. Science support is an important component of the interdisciplinary approach of the laboratories necessary to accomplish national projects, and it helps maintain and strengthen the multiprogram nature of the laboratories. A high level of collaboration among the

laboratories utilizing their respective core competencies, increases their collective contribution, making the system as a whole much more valuable than the sum of its parts. The Implementation Plan for the NNSA adequately addresses the concerns you raise, and the Department is committed to maintaining a culture that permits the laboratories to continue this effective relationship

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QUESTION SUBMITTED BY SENATOR LARRY CRAIG

COMPUTING RESEARCH

Question. What is the status of the Scientific Simulation Initiative? You may recall that the conference report for fiscal year 2000 urged the Department to submit a comprehensive plan for a non-defense supercomputing program that would reflect a unique role for DOE in this multi-agency effort, and a budget plan with spending requirements over a five year budget cycle.

Answer. The Department of Energy did not propose a Scientific Simulation Initiative (SSI) in the fiscal year 2001 budget request. As you may be aware, in the fiscal year 2000 request, the proposed SSI focused on two major applications, global climate and combustion systems, and requested funds for a new 5 Teraflop computing facility. The Advanced Scientific Computing Research request for fiscal year 2001 focuses on a broad spectrum of basic science applications and includes modest funding investments for upgrades to existing computing facilities to enable scientists to make progress on scientific problems.

On March 24, 2000, the Office of Science (SC) submitted to Congress a comprehensive plan for its supercomputing program, entitled, "Scientific Discovery Through Advanced Computing." This plan provides a five year vision for scientific computing within the Office of Science. It outlines a carefully designed strategy for building both the scientific computing software infrastructure, which is needed to take full advantage of terascale computers, and the scientific computing hardware infrastructure, which provides the resources needed to solve challenging scientific and engineering problems.

The Plan focuses on the scientific issues faced by all of the programs within the Office of Science—Basic Energy Sciences, Biological and Environmental Research, Fusion Energy Sciences, and High-Energy and Nuclear Physics—that can be expected to benefit from the extraordinary advances being made in computing technology as well as on the underlying computer science research supported by Advanced Scientific Computing Research. The funds requested in this Plan are essential to realizing the specific goals of the Department; however, the advances made with this funding will have a broad impact across the nation's scientific and engineering community. Outyear estimates are not provided in the Plan. However, it should be noted that the request for each fiscal year will be structured and implemented in such a fashion that it will deliver significant results with no additional increases in funding. A copy of the plan is attached.

[CLERK'S NOTE: *Scientific Discovery through Advanced Computer*, by the Office of Science, U.S. Department of Energy, March 24, 2000 can be found in the Energy and Water Subcommittee files.]

QUESTIONS SUBMITTED BY SENATOR PATTY MURRAY

CIVILIAN RESEARCH PROGRAMS

Question. There has been a lot of controversy over computational capabilities for the Department of Energy and its civilian research programs. Can you give us the philosophy of the Department relative to computational capabilities for its research programs, both those sponsored by Defense Programs in the Weapons Laboratories and those sponsored by Office of Science in the Civilian Laboratories? Also, would you explain under the auspices of NNSA how the ASCI Program and the ASCR inter-relate.

Answer. The computational modeling and simulation efforts in both the National Nuclear Security Agency (NNSA), i.e., the Accelerated Strategic Computing Initiative (ASCI), and the Office of Science (SC) are focused on large scale scientific and engineering simulations. In the case of ASCI, the simulations are focused on complex nuclear weapons systems as a critical component of the Department's ability to guarantee the safety and reliability of the nuclear stockpile in the absence of testing. The ASCI program and its computers are fully dedicated to this mission. The investments in SC cover a wide range of non-weapons related scientific problems such as understanding the fundamental properties of magnetic materials; under-

standing the chemistry of complex molecules such as hydrocarbon fuels and nuclear waste products; understanding the physics of plasma turbulence and its impact on energy transport; and understanding the fundamental properties of nuclear matter. The Office of Science, through its Advanced Scientific Computing Research (ASCR) program, provides the computing and communications infrastructure to support these modeling and simulation efforts as well as the advances in the underlying software, computer science and applied mathematics that are required to enable scientists to make progress on this class of complex scientific problems.

The computing infrastructures to support NNSA must be separate because NNSA's investments are fully used in supporting its missions and because of the special security requirements of NNSA applications and programs. However, in the areas of software technology, computer science and applied mathematics many of the technical problems that arise in using terascale computing capabilities are generic to scientific simulation and apply equally to ASCI and SC applications. Areas of common interest include:

—Scientific data management.
—Analysis and visualization of petabyte data sets.
—Scalable numerical algorithms for some fundamental computational tasks.
—Computer operating systems.

In these areas the SC Plan has been carefully coordinated with those of ASCI as well as those of the National Science Foundation. However, there are needs unique to SC's mission. Examples of such needs include:

—Efficient access to petabyte data sets from both national laboratory and university computer and network environments. DOE operates a number of major scientific facilities for the nation with significant university use. These include high energy and nuclear physics experiments such as the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory, the BaBar experiment at the Stanford Linear Accelerator, and experiments at Fermilab and the Thomas Jefferson National Accelerator Facility. In addition, the Office of Science operates high luminosity light sources such as the National Synchrotron Light Source at Brookhaven National Laboratory, the Advanced Photon Source at Argonne, and the Advanced Light Source at Lawrence Berkeley National Laboratory. Finally, the Office of Science operates high performance computing facilities with associated data archival facilities such as the National Energy Research Scientific Computing Center at Lawrence Berkeley National Laboratory. Many of these facilities produce tens of thousands to millions of gigabytes (petabytes) of data annually, which must be made accessible to researchers at national laboratories and universities. This requirement to efficiently manage access to petabyte-scale data resources by thousands of scientists nationwide is significantly different from the typical requirements faced by NSF. Even in the case of global climate modeling, where NSF supports a major facility, NCAR, the large data sets from the worldwide initiative to systematically compare the results of the different climate model codes, PCMDI (Program in Climate Model and Data Intercomparison), were stored at NERSC in its archival storage systems.
—Collaboration technologies to support the integration of widely dispersed researchers.
—Mathematical and software libraries and technologies specific to the scientific mission of the SC, e.g., global climate, molecular science, plasma physics, elementary particle physics, and accelerator physics.
—Robust, easy-to-use scientific applications codes for use by the larger scientific community ("community codes").

In the areas of Information Technology Research supported by the Office of Science a significant portion of the effort is invested in teams which can not only advance the state of the art in basic research but also integrate the results of that research into software which can be used by scientists in other disciplines. This requirement for lifecycle support is critical to enable advanced information technologies to be adopted and used effectively by scientists. It is important to note, however, that the effort to integrate the products of basic research into software objects is itself a significant research activity and the Office of Science's work in this area, and especially software component technologies for high performance computing, has advanced the state of the art in software development methodologies.

By building on the accomplishments of ASCI and working closely with ASCI on projects of common interest, SC will be able to focus more of its effort on the problems in computational science, computer science, and applied mathematics that are unique to SC's mission and research environment.

COMPUTATIONAL UPGRADE FOR THE EMSL

Question. As you know, the Environmental Molecular Sciences Laboratory at PNNL was opened approximately three years ago. At that time, the Laboratory had one of the most sophisticated and advanced computational capabilities in the United States. Technology is moving rapidly, therefore, there is a continuing need for all of DOE's Science facilities to have access to continuing computational upgrades. What is the impact of not having continuing computational upgrade capabilities in the Biology and Environmental Research Program for EMSL or other facilities in that Program?

Answer. The Biological and Environmental Research (BER) Program has a need for significant computational resources for modeling, data analysis, and simulation in structural biology, environmental molecular sciences, global climate change, and subsurface sciences. BER's current research needs will require access to approximately 5–8 teraflops of sustained, high-end computing capability distributed among three centers that also contain 1–3 Petabyte-scale data archives and Gigabit per second network access in the very near future. The current ¼ teraflop system (the IBM SP) and the associated data storage and research systems and staff at the EMSL form the basis for one of these centers. Significant modeling and simulation research involving multi-disciplinary teams from multiple institutions across the country is being undertaken on EMSL's IBM SP, including research on biomolecular interfaces, the quantum chemistry of actinides, and the fate of contaminants in groundwater, among others. Results from these modeling and simulation efforts are expected to be quite useful for addressing DOE's environmental needs. Nevertheless, the BER Program recognizes the future need for upgrading the IBM SP, as well as its other systems.

Question. Given the technological advances that are taking place in Biological and Computational Sciences, what are the potential capabilities that exist within EMSL relative to the Proteome Project, especially with the unique instrumentation that exists at EMSL?

Answer. Although BER's fiscal year 2001 request is not specifically focused on a Proteome Project, the BER request does include a continuation of structural biology and functional genomics research, as well as the initiation of the microbial cell project. Primary instrument capabilities within the EMSL that are being applied to structural biology and functional genomics include the suite of nuclear magnetic resonance (NMR) spectrometers, and the suite of mass spectrometers. Current computational capabilities within the EMSL that are being applied to structural biology studies include the high performance computer (IBM SP) within the Molecular Sciences Computing Facility (MSCF). However, most of the large, multi-institutional projects making use of the IBM SP are currently focused on DOE's environmental problems in groundwater, the vadose zone, and the atmosphere.

The BER Program recognizes the need to enhance EMSL capabilities in structural biology and functional genomics, and as a first step, has requested an additional $3,000,000 in capital equipment for EMSL in the fiscal year 2001 President's Request to allow users to undertake functional genomics and structural biology research. The additional funding will be used for acquisition of NMR and mass spectrometers, including a 9.4 Tesla Fourier Transform mass spectrometer specifically for functional genomics and structural biology research.

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

STATEMENT OF IVAN ITKIN, DIRECTOR

OFFICE OF ENVIRONMENTAL MANAGEMENT

STATEMENT OF CAROLYN HUNTOON, ASSISTANT SECRETARY

Senator MCCONNELL. [presiding]. All right. With that, we will hear from Ivan Itkin, Director, Office of Civilian Radioactive Waste Management, and Carolyn Huntoon, Assistant Secretary, Office of Environmental Management.

If you all would, plan that your opening statements be about 10 minutes each. And we will put what further observations you may have in writing in the record. That would be appreciated.

Dr. Itkin, do you want to—I see you listed first here. So go right ahead.

STATEMENT OF DR. IVAN ITKIN

Dr. ITKIN. Thank you, Senator. Mr. Chairman and members of the committee, I am Ivan Itkin. I am the director of the Office of Civilian Radioactive Waste Management. And I appreciate the opportunity to present our fiscal year 2001 budget request and to discuss our scientific and technical activities at the Yucca Mountain site in Nevada. And with your permission, I will submit my written statement for the record.

Our budget request of $437.5 million supports our Nation's policy for the long-term management of spent nuclear fuel and high-level radioactive waste. We are nearing the completion of scientific and engineering work that will be the foundation for a presidential recommendation on whether or not to proceed with a permanent geologic repository at Yucca Mountain. This decision should occur in 2001. It must be based on sound science, and it must include the documentation required by the Nuclear Waste Policy Act.

BACKGROUND

Let me restate the importance of geological disposal. It is the cornerstone of our national policy for radioactive waste management. A permanent geologic repository will address the management of commercial spent nuclear fuel, but it is also essential to achieve our nonproliferation goals, to dispose of materials from dismantled nuclear weapons and nuclear-powered naval vessels, and to manage waste from the cleanup of former weapons production sites.

The Civilian Radioactive Waste Management Program has made significant accomplishments under this Administration. During the last 5 years, Program scientists and engineers have been examining Yucca Mountain. We completed a cross-drift tunnel above and through the rock formation that may house a repository.

For almost 2 years, scientists and engineers have been examining that formation. We continue to conduct the world's largest thermal test of a geologic formation. We believe that we are close to a decision on whether we can recommend this site for further development as a repository.

SUMMARY OF FISCAL YEAR 2001 BUDGET REQUEST

Let me now summarize the program's fiscal year 2001 budget request.

We plan to devote $358.3 million, over 80 percent of the fiscal year 2001 budget request, to the Yucca Mountain Project. These funds will be principally devoted to completing remaining work. We will also address some work that was deferred because of past funding shortfalls.

With the full support of the fiscal year 2001 budget, the Program can proceed to the license application, should the President and Congress, approve the site.

PERFORMANCE MEASURES

By fully funding the fiscal year 2001 budget request, Congress will enable the program to meet the most critical performance measure: That is, to begin waste emplacement by 2010. This has been the Department's stated goal since 1989. We remain on track to meet this goal.

FISCAL YEAR 2001 ACTIVITIES

Now, let me speak briefly on how the program will apply the funding requested in our fiscal year 2001 request. My written testimony provides greater details. I would like to point out some of the highlights.

YUCCA MOUNTAIN

In the 1998 Viability Assessment, the program identified the progress to date, the remaining work, and the cost for the remaining work.

In fiscal year 2001, we expect to close out the remaining uncertainties that the Assessment identified. We will address aspects of design and engineering work suggested by the Nuclear Waste Technical Review Board, and build upon the quality assurance program to meet the expectations of the Nuclear Regulatory Commission.

A key task we have set for ourselves before a recommendation is the completion of the Site Recommendation Consideration Report. This report, with supporting documents, will be made available to the State of Nevada, the Nuclear Regulatory Commission, and stakeholders to elicit their views.

In fiscal year 2001, we will continue to support external oversight by the State of Nevada by again requesting the restoration of funding. We will again fund payments-equal-to-taxes, as required by the Nuclear Waste Policy Act.

We will continue to fund a cooperative agreement with the University and Community College System of Nevada. This agreement provides an independently derived body of scientific and engineering data concerning the study of Yucca Mountain.

CONCLUDING REMARKS

Mr. Chairman and members of the committee, as I said in my opening remarks, we have made significant progress. We are on track to make a decision on site recommendation in 2001 and a subsequent license application in 2002, with the overall goal of beginning emplacement by 2010.

When we set out to characterize the Yucca Mountain site through an ambitious scientific program, we knew that we would be faced with challenges. I believe that by the end of 2001 we will have met those challenges. While there will likely be additional issues that we will have to address if we proceed to licensing, the Program is well positioned to move forward.

The funding we have requested is needed to enable us to complete, on schedule, the activities that are necessary for informed policy decisions. Now, when we are so close, we should not allow resource considerations to undermine the public confidence in our decision-making process and delay this program.

I urge you to consider favorably our appropriation request. I thank the committee very much for hearing our testimony this morning. I would be pleased to answer any questions that you may have. Thank you.

[The statement follows:]

PREPARED STATEMENT OF IVAN ITKIN

Mr. Chairman and members of the Committee, I am Ivan Itkin, Director of the Department of Energy's Office of Civilian Radioactive Waste Management. I appreciate the opportunity to present our fiscal year (FY) 2001 budget request to you and to discuss our plans for the scientific and technical activities at the Yucca Mountain site in Nevada.

Our fiscal year 2001 budget request of $437.5 million is devoted to advancing our nation's policy for the long-term management of spent nuclear fuel and high-level radioactive waste. This request provides for the near-term completion of scientific and engineering work that will be the foundation for a Presidential site recommendation on whether or not to proceed with a permanent geologic repository at Yucca Mountain, Nevada. We are nearing this Presidential decision, which should occur in fiscal year 2001. A recommendation of such national importance must be based on sound science. It must not only be accompanied by the documentation required by law, but must also inform our policy makers, our oversight agencies, and the public regarding the scientific basis for the decision.

BACKGROUND

The Civilian Radioactive Waste Management Program, particularly the ongoing scientific and technical work at Yucca Mountain, is the cornerstone of our national policy for the management of nuclear waste. Permanent geologic disposal not only addresses our management of spent nuclear fuel from commercial electric power generation, but it is essential to advancing our non-proliferation goals. A permanent disposal solution will secure highly enriched spent nuclear fuel from foreign research reactors. It will also provide for the disposition of surplus plutonium from dismantled nuclear weapons. In order to continue the operation of our nuclear-powered naval vessels, a permanent geologic repository is necessary for the disposition of spent nuclear fuel from our naval reactor program. Finally, a permanent geologic repository is vital for cleaning up the legacy of our past nuclear weapons production at sites throughout the country.

Over the past few years, the Department has made significant progress toward a recommendation decision on a permanent solution for spent nuclear fuel and high-level radioactive waste. Construction of the Exploratory Studies Facility has afforded us almost five years of direct examination of the geology underneath Yucca Mountain. From this study, our scientists and engineers, including world experts from our nation's universities and from our national laboratories, have advanced our understanding of a potential repository system. This understanding has led us to

further focus our investigations, responding in part to the Nuclear Waste Technical Review Board and other experts.

This year, we will complete niches and alcoves in the cross-drift tunnel that will assist us in developing a more complete three-dimensional model of the geologic formation that might house a repository. For nearly two years, we have gathered and integrated data input from the cross-drift tunnel into our performance models to refine our predictions of repository performance. We continue to conduct the largest thermal test of a geologic formation in the world. This test, commonly known as the drift-scale test, assesses how long-term exposures to heat from waste packages might affect the hydrology and near-field environment within tunnels that may be constructed within Yucca Mountain. This work will help determine the effects of heat on waste package performance and assist in the further refinement of repository designs that must be accomplished as we move toward potentially licensing a repository, if the site is recommended for development.

Since the enactment of the Nuclear Waste Policy Act in 1982, our nation has made a substantial investment in permanent geologic disposal. Over $4 billion has been committed to the scientific and technical work at Yucca Mountain. After almost 18 years of cutting-edge science and engineering, we are very close to making a recommendation regarding the suitability of this site for further development as a repository.

SUMMARY OF FISCAL YEAR 2001 APPROPRIATIONS REQUEST

The fiscal year 2001 budget request is $437.5 million for the Office of Civilian Radioactive Waste Management. This request includes a funding level of $325.5 million from the Nuclear Waste Fund appropriation, and $112 million from the Defense Nuclear Waste appropriation.

The fiscal year 2001 budget request of $437.5 million is devoted principally to the activities that are most important to support a determination of whether the Yucca Mountain site is suitable and should be recommended for further development as a permanent geologic repository. A Secretarial decision to recommend the site to the President is expected to occur in fiscal year 2001. As required by Section 114 of the Nuclear Waste Policy Act, a recommendation by the Secretary to the President will be accompanied by documentation that provides a comprehensive basis for that recommendation.

The fiscal year 2001 budget request is 25 percent greater than our fiscal year 2000 funding level of $351.2 million. This increase reflects the program's effort to address the remaining work that is necessary for a site recommendation. This remaining work was described in substantial detail in the December 1998 Viability Assessment. The fiscal year 2001 request is also necessary to achieve to the work schedule published in the Viability Assessment. Regaining momentum with the fiscal year 2001 request will enable the program to meet its obligation to be responsive to emerging scientific issues, such as those raised during our extensive ongoing interactions with the Nuclear Waste Technical Review Board and the Nuclear Regulatory Commission. The fiscal year 2001 budget request also provides the foundation, again as described by the Viability Assessment, to begin the activities necessary to submit a license application in the following fiscal year, if the President recommends and Congress approves the site for development as a repository. Our approach to address these issues with the Board and the Commission as we proceed toward submitting a license application, is provided in our recently issued and updated Program Plan (Revision 3).

From the fiscal year 2001 budget request of $437.5 million, we have proposed allocating $358.3 million, an increase of 27 percent above the fiscal year 2000 allocation, to the Yucca Mountain Site Characterization Project. For activities under the purview of the Waste Acceptance, Storage, and Transportation Project, $3.8 million is allocated. For essential program management and integration functions, including those that are required to support a quality assurance program in accordance with Nuclear Regulatory Commission regulations and to finalize the Environmental Impact Statement that must accompany a site recommendation, $75.4 million is allocated. In addition, we plan to continue our commitment to further streamline overhead functions.

Consistent with the Department's contracting policy regarding management and operations contracts, and in conformance with direction provided in the enacted Energy and Water Development Appropriation, in fiscal year 2001 we are recompeting our management and operations contract. The program's current management and operations contract was awarded in 1991 and will expire in February 2001. We expect to award a follow-on performance-based contract in fiscal year 2001. With full support of our fiscal year 2001 request, we expect to successfully recompete and

achieve our milestone for the decision on site recommendation. Within each budget element, we have allocated funds for contractor transition to ensure continuity of the technical work during fiscal year 2001.

Also in fiscal year 2001, the Program will work closely with the Russian Federation to address radioactive waste management strategies. A new initiative to advance the Department's nonproliferation objectives with Russia is included in the Departmental budget request for the National Nuclear Security Administration. The funding requested for that initiative would be co-managed by the Office of Civilian Radioactive Waste Management and the Office of Non-Proliferation and National Security. We will address issues related to spent nuclear fuel storage and disposal through cooperative activities under bilateral agreements that we are developing with the Russian Federation.

PERFORMANCE MEASURES

Our request reflects the funding that will be needed to enable us to meet a most critical performance measure: maintaining the schedule to begin waste acceptance by 2010. This has been the Department's goal since 1989. The Department takes seriously its obligation to accept commercial spent nuclear fuel, as well as the need to provide a permanent disposal solution for defense spent fuel and other government-owned high-level radioactive wastes.

Our measures for fiscal year 2001 are: issuing the Final Environmental Impact Statement with the site recommendation decision in fiscal year 2001; and continuing to prepare a license application to the Nuclear Regulatory Commission for submission in fiscal year 2002, contingent on a site recommendation by the President and designation of the site by Congress.

FISCAL YEAR 2001 ACTIVITIES

I would now like to describe in more detail our fiscal year 2001 objectives and how the funding requested in our budget request will support our activities. I have, as an attachment to my testimony, provided a summary of the program's accomplishments in fiscal year 1999 and our ongoing activities this fiscal year.

YUCCA MOUNTAIN

In fiscal year 2001, the funds allocated to the Yucca Mountain Site Characterization Project will be used to advance the work identified in the Viability Assessment. This work includes addressing the remaining uncertainties by studying the presence and movement of water through the repository block, the effects of water movement on the waste package, and the effects of heat from the decay of radioactive materials inside the waste packages on the site's geologic and hydrologic behavior. In addition, the program is addressing some of the design and engineering work suggested by the Nuclear Waste Technical Review Board. Through our work activities, we will:

—Complete the necessary scientific and engineering work for the characterization of the Yucca Mountain site.

—Update the total system performance assessment of Yucca Mountain, supporting the development of a site recommendation and integrating process models refined to reflect our current understanding of the geology, hydrology, and geochemistry within Yucca Mountain.

—Issue the Site Recommendation Consideration Report to inform all parties about our evaluation to date.

—Hold public consideration hearings, before the Secretary decides whether or not to recommend the site to the President.

—Issue the Final Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada.

—Continue and increase our efforts to support the preparation of a high-quality, complete, and defensible license application to the Nuclear Regulatory Commission if the President recommends the site in 2001.

The plan for fiscal year 2001 and beyond reflects the evolution of the project emphasis from scientific investigations to data synthesis, model validation, repository and waste package design, safety analysis, and documentation. The program's near-term priorities upon completion of site characterization will be to enhance and refine repository design features and to develop the remaining information required to continue to a license application if a decision to recommend the site is made.

Our budget request for Yucca Mountain is allocated under the following project elements: Core Science, Design and Engineering, Licensing/Suitability/Performance Assessment, Environmental Review under the National Environmental Policy Act, Operations/Construction, External Oversight and Payments-Equal-to-Taxes, and

Yucca Mountain Project Management. The activities planned under each of these categories are described below.

Core Science:

Core Science includes: collecting site characterization and performance confirmation data from the surface and subsurface; performing laboratory tests; monitoring and collecting environmental data; formulating scientific hypotheses; modeling individual and combined natural processes; compiling scientific information for technical data bases; and writing scientific descriptions and analyses used to document results and findings.

The fiscal year 2001 allocation of $69.4 million to Core Science is a decrease of two percent ($1.2 million) below the fiscal year 2000 funding level. In fiscal year 2000, we began to concentrate on data synthesis and documentation, model updating and validation, and definition of performance confirmation activities, reflecting our plans to complete site characterization. In fiscal year 2001, we will complete our effort to acquire and analyze site characterization information needed to reduce the scientific uncertainties identified in the Viability Assessment, prior to making a suitability evaluation site recommendation decision, and if appropriate, submitting a license application. In the coming years, Core Science activities will focus on confirmatory testing supporting a license application. Specific activities will focus on testing in the Exploratory Studies Facility, including the cross-drift and the drift-scale heater test; confirmatory field-scale tests; modeling; environmental, safety, and health compliance; and environmental monitoring and mitigation activities.

Within the Exploratory Studies Facility, we will continue the long-term drift-scale heater test that began in December 1997. This test will allow us to determine how the rock and fluids in a repository system will behave over the long-term in the presence of heat generated by radioactive decay of the emplaced waste. We will continue testing in the cross-drift to collect data on hydrologic properties of the repository horizon. For example, we will study fracture-matrix interaction and fracture flow properties, particularly of the lower lithophysal unit where approximately 65 percent of the emplacement drifts are expected to be located.

We continue to incorporate test results into geologic and hydrologic process models. These models underlie the total system performance assessment models that support both the site recommendation and license application. Confirmatory data collection and long-duration testing will continue.

The fiscal year 2001 budget request includes $10 million for a cooperative agreement between the Department and the University and Community College System of Nevada (UCCSN). The agreement started in fiscal year 1999 and will continue into fiscal year 2002. The cooperative agreement provides the public and the Yucca Mountain Project with an independently derived body of scientific and engineering data concerning the study of Yucca Mountain. Under this agreement, UCCSN will perform scientific and engineering research and will foster collaborative working relationships between government and academic researchers.

Design and Engineering:

Design and Engineering includes three major areas: waste package development, repository design, and systems engineering. In turn, waste package development includes two distinct areas: design of the waste package, and testing of waste forms and waste package materials. Repository design also includes two areas: subsurface and surface facilities. Systems engineering coordinates all aspects of design, construction, and operations to ensure that designs meet all requirements and that facilities are fully integrated.

The fiscal year 2001 allocation of $111.2 million to Design and Engineering is an increase of 68 percent ($44.9 million) above the fiscal year 2000 funding level. This fiscal year 2001 funding level will allow the program to resume design work that was deferred due to budget shortfalls that forced the program to focus efforts on site characterization. As part of a natural design evolution, we will continue to refine the repository and waste package design features beyond the concept that was evaluated in the Viability Assessment. Our activities in this area will focus on providing the basis for decisions and advancing the designs consistent with the regulatory requirements for a license application, if the site is recommended. Program scientists and engineers will analyze the design features in a total system performance assessment that incorporates updated data from core science activities and process models. In part, the increased fiscal year 2001 allocation addresses requests and recommendations made by the Nuclear Waste Technical Review Board and the Nuclear Regulatory Commission for further design enhancements and details. This work is necessary to develop a repository and waste package design suitable for a site recommendation and, further, evolving to a license application design.

Licensing/Suitability/Performance Assessment:

Activities under Licensing/Suitability/Performance Assessment encompass compiling the technical documentation that serves as the basis of a suitability determination and a possible recommendation to proceed with developing the Yucca Mountain site. If the Yucca Mountain site is recommended by the President and Congress, for further development, the program will refine and subsequently document its work to shift the focus toward addressing the licensing expectations of the Nuclear Regulatory Commission. Assessing the performance of a repository system at Yucca Mountain is critical to both a site recommendation in fiscal year 2001 and any subsequent licensing activities.

The fiscal year 2001 allocation of $85 million to Licensing/Suitability/Performance Assessment is an increase of 38 percent ($23.6 million) above the fiscal year 2000 funding level. The culmination of the program's site characterization efforts is to prepare the documentation required under the Nuclear Waste Policy Act to support a decision on whether or not to submit a site recommendation to the President. In support of a recommendation, the program's focus for early fiscal year 2001 is to complete the Site Recommendation Consideration Report. This report will present general background information and descriptions of the site characterization program and the site. It will also include descriptions of the repository design, the waste form and waste packages, a discussion of data related to the safety of the site, and a description of the performance assessment of the repository.

The Site Recommendation Consideration Report and its supporting documents will be made available to the State of Nevada, the Nuclear Regulatory Commission, and stakeholders in fiscal year 2001. The program will then focus its efforts on addressing their comments and views. Public hearings will be held in the area around the Yucca Mountain site. We also expect to receive comments from the Nuclear Regulatory Commission, and views and comments from the Governor and legislature of Nevada. These comments and our responses will be part of the basis for a site recommendation presented to the President.

Assessing how a repository system at Yucca Mountain might perform is critical to a decision regarding whether to recommend the site. The performance assessment of a repository system at Yucca Mountain will be refined to incorporate advances in the program's scientific understanding of the natural systems at Yucca Mountain, and to integrate refinements in waste package and repository design. Even after a suitability evaluation and site recommendation decision is made, performance assessment iterations would continue to address the licensing expectations of the Nuclear Regulatory Commission and to present the program's understanding of how a repository will perform at limiting human exposure to radionuclide releases.

The license application technical data used for a repository and waste package design, total system performance assessment, and models for site processes and conditions, must be traceable and electronically retrievable in accordance with the Commission's regulation 10 CFR Part 2, Subpart J. We will use the latest available web-based technologies to ensure that program data and records are easily retrievable and available to stakeholders.

Environmental Review under the National Environmental Policy Act:

The fiscal year 2001 allocation of $1.6 million to Environmental Review is an increase of 21 percent ($0.3 million) above the fiscal year 2000 funding level. During fiscal year 2001, we will complete all necessary Environmental Review documentation, including the Final Environmental Impact Statement, which is required by the Nuclear Waste Policy Act to accompany a site recommendation. The fiscal year 2001 activities include a Departmental and inter-agency review of all documents in accordance with Council on Environmental Quality requirements, Environmental Protection Agency rules, and Department of Energy implementing regulations. The program will also complete the administrative work necessary to support the Final Environmental Impact Statement.

Operations/Construction:

The fiscal year 2001 allocation of $33 million to Operations/Construction is an increase of 10 percent ($3.0 million) above the fiscal year 2000 funding level. This budget request will support the completion of construction of the Exploratory Studies Facility. Following completion, the program's operations activities will transition to the maintenance of the underground facilities to conduct confirmatory testing. These activities are in part to verify what we have learned from our core science work, as well as to verify the effectiveness of waste package and repository design.

External Oversight and Payments-Equal-to-Taxes (PETT):

The fiscal year 2001 allocation of $21.8 million to External Oversight and Payments-Equal-to-Taxes is an increase of 33 percent ($5.4 million) above the fiscal year 2000 funding level. In its budget request, the Administration continues to support the oversight activities of the State of Nevada as required by the Nuclear Waste Policy Act. These oversight activities are solely for independent review of ongoing scientific and technical work. The fiscal year 2001 increase is the result of a newly negotiated payment-equal-to-taxes agreement with the State of Nevada and the local counties; it restores funding to the State of Nevada to support oversight activities.

External oversight activities consist of financial and technical assistance to the State of Nevada and affected units of local government (i.e., Churchill, Clark, Esmeralda, Eureka, Lander, Lincoln, Mineral, Nye, and White Pine Counties in Nevada and Inyo County in California). Payments-equal-to-taxes are made to the State of Nevada and Nye and Clark Counties.

Yucca Mountain Project Management:

The fiscal year 2001 allocation of $36.3 million to Project Management is a small increase—3 percent ($1.1 million)—above the fiscal year 2000 funding level.

Project Management includes conducting public information and outreach programs to ensure open and informative interactions with the State of Nevada, units of local government, the public, technical review organizations, and other program stakeholders. In fiscal year 2001, we expect increased interest due to the impending site recommendation and environmental review activities. Project Management will continue in fiscal year 2001 to further enhance project control activities, including planning, budgeting, and scheduling, in coordination with Program Management and Integration.

WASTE ACCEPTANCE, STORAGE, AND TRANSPORATION

The primary responsibilities of the Waste Acceptance, Storage, and Transportation (WAST) Project are to develop a process for the physical transfer of spent nuclear fuel to the federal government in accordance with applicable legal requirements. In preparation for such a transfer when a federal facility becomes available, the small budget request for this area maintains the core capability to implement a private sector-based national transportation capability for waste acceptance and transportation, and to resolve institutional issues with stakeholders in preparation for the implementation of the transfer.

Transportation

The fiscal year 2001 allocation of $1.75 million to Transportation represents the resumption of activities to develop a private sector-based national transportation capability that would be required if a positive site recommendation is made in fiscal year 2001. The Department plans to update and solicit comments on a draft request for proposals for waste acceptance and transportation services after fiscal year 2001, if the site is recommended by the Secretary and approved by the President and Congress. After considering comments on the draft request for proposals, we plan to release the final request for proposals in fiscal year 2002.

Waste Acceptance

The fiscal year 2001 allocation of $1.5 million for Waste Acceptance is a 20 percent ($0.25 million) increase from the fiscal year 2000 funding level. Waste Acceptance activities will focus on developing modifications to the Standard Disposal Contract to support the acquisition of waste acceptance and transportation services from the private sector. Fiscal year 2001 activities include updating the commercial spent nuclear fuel discharge projections, which are necessary to determine implementation of the Standard Disposal Contract.

The fiscal year 2001 allocation will serve to integrate acceptance criteria and schedules for Department-owned spent nuclear fuel and high-level radioactive waste under the auspices of the Office of Environmental and Waste Management; surplus plutonium and mixed-oxide fuel under the auspices of the National Nuclear Security Administration; and spent nuclear fuel and high-level waste from the naval reactor program.

PROGRAM MANAGEMENT AND INTEGRATION

The Program Management and Integration Activity oversees the integration of Yucca Mountain Site Characterization Office and Waste Acceptance and Transportation Project activities to ensure that they comply with all external regulatory re-

quirements, Departmental reporting and accounting systems, and oversight organizations.

The fiscal year 2001 allocation of $75.4 million to Program Management and Integration is a 10 percent increase ($7.2 million) above the fiscal year 2000 funding level. The increase reflects the need to assure that major programmatic decision documents expected in fiscal year 2001 comply with the statutory requirements of the Nuclear Waste Policy Act, as well as regulatory requirements imposed by the Nuclear Regulatory Commission, the Environmental Protection Agency, and other federal oversight groups.

A significant portion of the fiscal year 2001 Program Management and Integration allocation will go towards continuing to implement a Nuclear Quality Assurance program that sufficiently addresses the expectations of the Nuclear Regulatory Commission. Under the Nuclear Waste Policy Act, as amended, any facility that may be constructed must be licensed by the Commission, thus necessitating the implementation of an effective Nuclear Quality Assurance program.

The Program Management and Integration allocation funds a critical element of the work required to reach the decision on site recommendation, and that support the completion of the Final Environmental Impact Statement, which must accompany a site recommendation. A specialist contractor continues to finalize the Environmental Impact Statement to develop an independent assessment that meets the requirements for environmental reviews.

Finally, the fiscal year 2001 allocation will be utilized for federal salaries and benefits, and mandatory costs to utilize facilities and infrastructure for the federal staff.

LITIGATION

The Department is in litigation over the delay in meeting our contractual obligation to accept spent fuel from the nuclear utility companies by January 31, 1998. The issue of waste acceptance is clearly one that is high on our agenda and we are actively working with utilities in an effort to resolve it and the ongoing litigation.

CONCLUDING REMARKS

Mr. Chairman and members of the Committee, as I said in my opening remarks, we have made significant progress. The Department is coming to the end of a long road. When we set out to characterize the Yucca Mountain site through an ambitious scientific program, we knew that we would be faced with challenges. I believe that by the end of fiscal year 2001, we will have met those challenges. While there will likely be additional scientific and institutional issues that we will have to address to support the licensing process if the site is recommended by the Secretary and the President approves the recommendation, the program is well positioned to move forward.

The program is nearing a decision in fiscal year 2001 to determine if we can move ahead with a permanent solution to the management of our nation's spent nuclear fuel and high-level radioactive waste. The funding we have requested is needed to enable us to complete, on schedule, the activities that are necessary for an informed policy decision. The program has been able to maintain the schedule for major milestones over the past years despite significant reductions from our request level, but only by deferring critical work. Now, when we are so close to significant decision points, we should not delay this program.

I urge you to consider favorably our appropriation request.

Thank you. I would be pleased to answer any questions you may have.

FISCAL YEAR 1999–FISCAL YEAR 2000 HIGHLIGHTS

SUMMARY

Fiscal year 1999 and fiscal year 2000 funding overview

In fiscal year 1999, OCRWM received an appropriation of $358 million. Of this, $4 million was allocated to evaluate the feasibility of Accelerator Transmutation of Waste technology, as directed by Congress. We allocated $282 million (79 percent) to the Yucca Mountain Site Characterization Project.

In fiscal year 2000, OCRWM received an appropriation of $351.2 million. Of that, we allocated over $281.2 million (80 percent) to the Yucca Mountain Site Characterization Project, the Program's principal focus.

Focus of activities in fiscal year 1999 and fiscal year 2000

The near-term focus of the Program is to complete the work to support the Secretary's decision on whether or not to recommend the Yucca Mountain site to the President for further development as a repository. Since the publication of the Via-

bility Assessment of a Repository at Yucca Mountain early in fiscal year 1999, the Program has continued to gain momentum toward this recommendation. The Viability Assessment has been used as a management tool to focus our site characterization activities to support this recommendation.

In fiscal year 2000, as a result of a funding level below the President's budget request, we prioritized our technical investigations. Our focus in fiscal year 2000 was on the science and engineering activities that most effectively reduce the level of uncertainty in analyses of repository performance.

We have continued the transition begun a number of years ago from a program previously dominated by underground construction activities and corresponding investigative science to data synthesis, model development and validation, performance assessment, and engineering related to repository and waste package designs. The Program also continues to place emphasis on Nuclear Quality Assurance activities to ensure that the data and models we utilize will support licensing, assuming the site is recommended and the President and Congress accept the site recommendation.

KEY ACCOMPLISHMENTS

Yucca Mountain

The Yucca Mountain Site Characterization Office has made significant progress toward completing the scientific investigations and engineering studies that are necessary to support a determination on the suitability of the Yucca Mountain site and a possible site recommendation. Our work focused on three areas identified in the Viability Assessment for further study: the presence and movement of water through the repository block, the effects of water movement on the waste package, and the effects of heat from the decay of radioactive materials inside the waste packages on the site's geologic and hydrologic behavior. Testing activities in all these areas have yielded important data that enhance our understanding of the natural characteristics and properties of Yucca Mountain and how a repository at that site would perform.

In January 2000, we updated the Repository Safety Strategy. This strategy is the roadmap that lays out our postclosure safety case to support a site recommendation decision. It identifies the key factors that affect repository performance and provides the basis for focusing our remaining site characterization activities. As a result of this prioritization, we believe that the basic processes that could affect repository performance are understood, and that the main emphasis for completing site characterization is to reduce uncertainties and to validate our models.

Among our scientific and technical accomplishments are:

—Continuation of the drift-scale heater test, which we are conducting to obtain data on the mechanical, thermohydrologic, and thermochemical properties of the potential repository host rock, 1000 feet below the surface of Yucca Mountain. The test has been in operation since 1997 and will continue for several more years. We have heated the rock and are maintaining the drift wall temperature at 392 degrees Fahrenheit for two years, before beginning a cool-down cycle. We have bored holes into the drift walls at varying distances from the heater to collect data and measure the results as the test progresses.

—Testing in the underground facility at Busted Butte near Yucca Mountain, which provides an analog to the rock that lies below the potential repository horizon. These tests are important to understand the potential transport of certain radionuclides from the repository area, through the unsaturated zone, and into the water table underlying Yucca Mountain. We have found that certain minerals, found naturally in the rock, bond with radionuclides and inhibit their movement.

—Examination of the movement of moisture within the mountain. We completed the cross drift in the Exploratory Studies Facility and will complete construction of test alcoves this year. We have begun a final set of experiments that will introduce water above the Exploratory Studies Facility and will monitor humidity and seepage in the Exploratory Studies Facility. We are analyzing information from tracer injection experiments to validate our estimates of seepage.

—Measurement of water levels from a series of monitoring stations located in deep bore holes.

—Monitoring and collecting of information for the environmental baseline, including wind, air quality, rainfall, surface water runoff, and flora and fauna.

—Materials testing on the nuclear waste types expected to be disposed in the repository to determine the effects on the waste and cladding from heat, moisture, and chemical reactions.

—Continued testing of potential waste package materials to determine corrosion rates and to identify other potential changes due to heat, moisture, and chemical reactions.

—Design and trade-off studies to select the repository and waste package reference design for the site recommendation and the final environmental impact statement.

We recognize that uncertainty can affect confidence in decisions related to the suitability of the Yucca Mountain site. In evolving the repository design concept over the past year, we have sought to select a design and to specify conditions on its implementation that are responsive to concerns about demonstrating performance, while at the same time balancing such significant factors as long-term public safety, intergenerational equity, worker safety, and cost.

In September 1999, this natural evolution resulted in an enhanced design that addresses these overarching concerns and responds to recommendations by the Nuclear Waste Technical Review Board. A key aspect of the enhanced design is a lower repository temperature, achieved through a set of thermal management techniques. We have also emphasized the need for flexibility to ensure that new scientific and engineering data gathered throughout the site characterization, construction, and operation and monitoring phases can be accommodated through reasonable changes in the repository design or operational concept. Similarly, our emphasis on flexibility allows for changes that might be driven by evolution in national policy at some future juncture.

Our efforts to make necessary modifications to the regulatory framework for evaluating the suitability of the Yucca have progressed. On November 30, 1999, the Department published a proposed revision to its repository siting guidelines. The comment period closed on February 28, 2000. The proposed revised guidelines reflect a shift away from a generic approach, which compared one site to another using individual technical criteria to a site-specific approach that relies on an overall, integrated systems evaluation of the expected performance of a repository at Yucca Mountain. The Nuclear Regulatory Commission took this same approach in its licensing regulation. These regulations must be compatible: a site that meets the Department's suitability guidelines should be one that is likely to satisfy the Commission's requirements and receive a license.

If the repository is to be licensed, the dose to a member of the public, as predicted by our total system performance assessment models, cannot exceed the regulatory standards that are now being finalized. In fiscal year 1999, we developed the detailed bases of the performance assessment models that will support this evaluation. These models integrate data from site investigations and laboratory studies, expert judgment, and information about engineered barriers. We updated the performance assessment models to reflect new information from site investigations and laboratory studies, advances in the modeling of physical processes at the site, and the enhanced repository design. We also completed a comprehensive peer review of our total system performance assessment. This independent evaluation and critique supports ongoing model refinement, which will be completed in fiscal year 2000.

The Program's completion of the initial performance confirmation plan for the repository is a forward-looking accomplishment that underscores our commitment to ensuring repository performance. This plan establishes that confirmatory testing will continue as long as necessary before repository closure to assure the Department and the Nuclear Regulatory Commission that the repository system will isolate waste as planned.

In July 1999, we reached a major program milestone by releasing the Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada. The draft environmental impact statement presents the results of an analysis of potential impacts associated with constructing, operating and monitoring, and eventually closing a repository at Yucca Mountain and of transporting waste to Yucca Mountain from 77 sites across the United States.

We recognize the need for public review of, and input into, this important document and have accommodated many requests from our stakeholders. During a 199-day public comment period, we conducted 21 hearings throughout the country to solicit comments on the draft environmental impact statement. Over 2,600 individuals attended those hearings and over 700 provided comments; the total number of comments received at the hearings and in writing exceeded 3,300. The final environmental impact statement will accompany a decision by the Secretary on whether or not to recommend the site for development as a permanent repository.

The U.S. leads the world in the science needed to develop a geologic repository, and the Program is active in efforts to share information and foster safe radioactive waste management around the globe. On October 31–November 3, 1999, the Depart-

ment sponsored an international conference on geologic repositories. This conference highlighted global progress on the management of nuclear materials and radioactive waste, and provided a forum to discuss ongoing and planned activities to develop geologic repositories. Both the policy and technical aspects of geologic disposal were addressed, and conference participants were invited to tour Yucca Mountain. Conference participants issued a Joint Declaration reiterating the international commitment to the safe management of nuclear waste.

As a separate initiative, OCRWM is working with the Russian Federation in a cooperative program to support our nation's nonproliferation objectives. We expect to complete a bilateral agreement with the Russian Federation in fiscal year 2000 that will foster collaborative repository research and assist the Russian Federation in developing a path forward for radioactive waste and surplus fissile materials disposition.

The Program also evaluated the potential application of accelerator transmutation of waste to civilian spent nuclear fuel. In October 1999, in response to prior Congressional direction, the Department submitted to Congress "A Roadmap for Developing Accelerator Transmutation of Waste Technology." To prepare the report, OCRWM established a steering group that included representatives from the key National Laboratories and from the National Academy of Sciences. In addition, an international expert panel outlined a science-based research program to address key issues and possible implementation scenarios for development and deployment of accelerator transmutation of waste technology. One critical issue is whether the achievable benefits outweigh the costs. Research by the National Academy of Sciences found that accelerator transmutation of waste is technically feasible, but would require billions of dollars and many decades to implement, and would not eliminate the need for a repository.

WASTE ACCEPTANCE, STORAGE AND TRANSPORTATION

During fiscal year 1999 and to date in fiscal year 2000, the Waste Acceptance, Storage, and Transportation Project focused on planning the process for accepting spent nuclear fuel from utilities and Department-owned spent nuclear fuel and high-level wastes from the defense complex. Our activities included updating inventories of commercial and Department-owned materials destined for repository disposal, updating verification plans, and completing prelicensing interactions with the Nuclear Regulatory Commission on the Phase 1 Centralized Interim Storage Facility Topical Safety Analysis Report, the Dry-Transfer System for Spent Nuclear Fuel Topical Safety Analysis Report, and the Actinide-Only Burn-Up Credit Topical Report. The Department made progress in developing modifications to the Standard Disposal Contract to support the processes related to waste acceptance and transportation services that will be provided by private sector vendors.

PROGRAM MANAGEMENT AND INTEGRATION

During fiscal year 1999 and to date in fiscal year 2000, the Program's management center continued to support the activities of the two projects—the Yucca Mountain Site Characterization Project and the Waste Acceptance, Storage, and Transportation Project.

Quality Assurance is a critical component of our work products to ensure that they can withstand scrutiny when the Site Recommendation Consideration Report is released in fiscal year 2001. Through audits, surveillances, and assessments, our QA personnel continued to work closely with technical personnel conducting scientific studies, design work, and performance assessment to identify the activities with greatest impact on levels of confidence related to evaluations of site suitability and possible license application. They examined whether that work was performed under appropriate QA requirements, whether requirements were fully understood, whether they were properly implemented, and whether compliance was adequately documented. For performance assessment, QA reviews focused on model validation, qualification of existing data, and software control. Deficiencies were evaluated and, where warranted, root causes were investigated. For each deficiency, a corrective action plan was implemented.

We provided systems engineering and integration support for site characterization, waste package design, and repository design activities and for the waste acceptance and transportation initiatives. We continued to conduct systems analyses to support selection of design alternatives for the site recommendation and license application. We prepared updates of the total system life-cycle cost and the fee adequacy report. We updated interface control documents and refined the Program's waste acceptance criteria for non-commercial spent nuclear fuel and high-level radioactive waste.

We coordinated and integrated the Program's activities with other Departmental elements. With the Office of Environmental Management and the Office of Fissile Materials Disposition, we continued to develop and implement an integrated schedule for the Monitored Geologic Disposal System.

We prepared updates to the OCRWM Program Plan and the Annual Report to Congress, and supported updates of the Department's Strategic Plan. In addition, we participated in numerous Nuclear Waste Technical Review Board and panel meetings and in pre-licensing meetings with the Nuclear Regulatory Commission.

Our current management and operations contract expires in February 2001. We are currently recompeting this contract to ensure appropriate support as we plan, integrate and manage a complex program in a Nuclear Regulatory Commission licensing environment. In January 2000, we issued a draft request for proposals to announce our intent to recompete this contract, in accordance with Departmental guidelines and consistent with Congressional direction.

We continued the development and implementation of a Program-wide information architecture to provide the foundation for definition, development, organization, management of, as well as access to, all Program data, records, and information systems.

We continued to use the Internet to distribute a variety of information to interested stakeholders. Many of the Program's policy and technical documents are available to the public through our electronic databases.

Finally, the Program met all Departmental Y2K milestones. Our mission-critical systems were subsequently independently verified and validated, and the transition to 2000 was problem-free.

Senator MCCONNELL. Thank you, Dr. Itkin.

Dr. Huntoon.

STATEMENT OF DR. CAROLYN L. HUNTOON

Dr. HUNTOON. Senator McConnell, other members of the committee, it is a pleasure to be here today to appear before you. I have had the opportunity in the past several months to visit the sites that I am responsible for, the former nuclear weapon production sites. We are left with huge volumes of waste that must be managed and stored.

There is extensive subsurface contamination that must be remediated and large quantities of nuclear materials left over from the production of the nuclear weapons—that we must store and protect to make the public safe, as well as our workers.

We have a tremendous job to do. I have seen most of it firsthand. In the 10 years since Environmental Management, EM, was established, the department has made great strides in addressing these problems. We have characterized a lot of the waste streams and the subsurface contamination. We understand better the nature and extent of the waste.

And we also have developed a life cycle analysis that we continue to refine to improve our baseline cost. And we are improving our project baselines to reduce costs.

Through contract reform, we are trying to improve our performance and the accountability of our contractors. We have accelerated the cleanup at Rocky Flats, and we have shown that we know how to reduce costs and schedules, to improve project management, and to incentivize the contractor.

In February, we signed a new performance-based contract for the closure of Rocky Flats, which——

Senator REID. Mr. Chairman, if I could interrupt just briefly. Senator Daschle has asked me to attend a meeting. I have a number of questions I would like to submit, and I will do those with

your permission. And they can respond at their earliest convenience.

Senator MCCONNELL. Thank you, Senator Reid. We will be happy to do that.

Senator REID. Pardon me for the interruption.

Senator MCCONNELL. Go ahead, Dr. Huntoon.

WASTE ISOLATION PILOT PROJECT

Dr. HUNTOON. Each year we are making significant progress all across the country. Last year we opened the Waste Isolation Pilot Plant, the world's first geological repository for nuclear waste.

To date, we have made 48 shipments of transuranic waste to WIPP from Rocky Flats, Los Alamos and Idaho. This includes 3 shipments from Rocky Flats under the new WIPP permit. This year we expect to begin shipping from Hanford and Savannah River. In fiscal year 2001, we plan to make about 485 shipments.

We completed our cleanup work at three more sites in fiscal year 1999. We will complete two more sites this year and three more in 2001, which will bring a total of 74 sites completed, nearly two-thirds of our inventory.

In fiscal year 1999, we vitrified 248 canisters of high-level waste at Savannah River and West Valley. And we expect to produce 400 more at Savannah River in 2000/2001.

In fiscal year 2001, we are requesting $6.318 billion: $4 billion in the defense and environmental restoration management appropriation, a little over $1 billion in the defense facilities closure project appropriation, $286 million in non-defense environmental management appropriation, and $303 million for the uranium enrichment decontamination and decommissioning fund. In addition, $515 million is set aside in the defense privatization appropriation.

Let me offer just a few highlights from our request. At Richland we are beginning to move corroding spent nuclear fuel from wet storage in the K Basins near the Columbia River to a new dry, safe facility away from the river. At Savannah River, we continue to process spent nuclear and plutonium-bearing materials in both the F and H Canyons, where these materials will be converted into safe forms for longer storage.

Our request would significantly increase funds to accelerate the pace of cleanup at the gaseous diffusion plants at Paducah, Kentucky, and Portsmouth, Ohio. At Paducah we will complete removal of Drum Mountain by the end of the year using additional funds provided by Congress for fiscal year 2000.

However, to reduce our cost and schedules further, we need new technologies. Our previous science and technology investments are beginning to pay off. We now have over 500 deployments of new technologies across the complex. I plan to continue these necessary investments.

Our laboratory in Idaho plays a critical research role as the lead laboratory for our EM science and technology programs. The Idaho site is developing technologies to fulfill our long-term stewardship responsibility. It also specializes in subsurface science to enable us to better understand the movement of the contaminants below the earth's surface.

Also concerning our Idaho site, we submitted a reprogramming last week for $11.5 million to allow us to complete the transfer of the Three Mile Island spent nuclear fuel, from an old storage pond to a new dry storage facility. Without this reprogramming, we will have to stop work on this important project in May, putting commitments under the settlement agreement at risk. We would appreciate your consideration of this request.

PRIVATIZATION ACTIVITIES

In August of this year, we will determine whether or not to authorize BNFL to proceed with the construction of a privatized facility to vitrify high-level waste at Hanford. Currently there are about 54 million gallons of waste stored in underground tanks near the Columbia River.

These tanks were designed for temporary, not permanent, storage. Some of the older tanks have leaked radioactive waste into the ground water that eventually flows to the river. Our agreement with the State of Washington requires us to begin removal and treatment of the waste by 2007.

Under the privatization approach, the department will not pay the contractor until vitrified waste is produced according to the terms of the contract. The assumption of financial risk by other contractors will provide more incentives for performance than traditional government contracting approaches.

I assure you the department will not authorize construction of these facilities until we are convinced the contractor's proposal meets all of our requirements and is in the best interest of the Federal Government. We will provide a rigorous review of the contractor's financing mechanisms, technical approaches, work schedules and cost information.

If BNFL is authorized to proceed, I request a $450 million in privatization budget authority that will enable the contractor to begin long lead procurement of items, start construction, and provide additional design. This will enable them to have a higher degree of confidence in the design prior to construction. At lower levels of funding, we would have to reevaluate the benefits of privatization approach.

Finally, my philosophy has been to do all our work safely. We will not compromise the safety of our workers or the environment for a schedule. We have communicated that principle to all of our contractors. I intend to ensure that all the EM personnel understand and meet their safety and security responsibilities.

In conclusion, cleaning up the legacy of environmental contamination from nuclear weapon production will fulfill a legal and a moral obligation that we owe to the States and the communities that helped us both in the Second World War and the Cold War. This is important work. I am enthusiastic about it and committed to meeting the challenge.

Thank you.

[The statement follows:]

PREPARED STATEMENT OF DR. CAROLYN L. HUNTOON

Mr. Chairman, and Members of the Subcommittee, I appreciate this opportunity to appear before you to discuss the Department of Energy's Environmental Management (EM) program and its fiscal year 2001 budget request.

Our budget request of $6.318 billion for fiscal year 2001 for the EM program will enable the Department to continue our progress cleaning up our sites. The request seeks $5.803 billion in traditional budget authority and $515 million in budget authority to support privatization projects. This is a total increase of approximately $440 million over this year's current appropriation.

This level of funding in our request supports critical safety programs for the protection of workers who carry out cleanup activities across the DOE complex; accelerates cleanup at key sites; enables the Department to be substantially in compliance with legal agreements and requirements; responds to Defense Nuclear Facilities Safety Board recommendations; addresses significant safety risks; and continues efforts to develop alternative technologies that can reduce the cost and schedule of cleanup. The request keeps us on track with meeting accelerated closure schedules at Rocky Flats in Colorado, and at the Mound and Fernald sites in Ohio. We will be able to continue progress at all sites, including treatment and disposal of nuclear waste and safe management of nuclear materials.

The fiscal year 2001 request for the EM program represents a significant increase over the fiscal year 2000 appropriation, both in traditional budget authority and in funding for privatization projects. We are requesting an additional $113 million in traditional budget authority and $327 million more for privatization, an eight percent increase overall. These additional funds will enable the Department to make more progress in fiscal year 2001—more shipments of transuranic waste to the Waste Isolation Pilot Plant (WIPP), accelerated cleanup at the Paducah and Portsmouth Gaseous Diffusion Plants, and the completion of EM cleanup at Argonne National Laboratory-West in Idaho, Monticello Remedial Action Project in Utah, and Grand Junction Site in Colorado. With this request we will also be able to maintain the schedule for the design, construction, and operation of a privatized vitrification plant for high-level nuclear waste at the Hanford site in Washington. This waste is currently in underground storage tanks near the Columbia River.

INTRODUCTION

Before discussing our fiscal year 2001 budget request, I would like to provide an overview of our program and describe some of the actions I have taken since being confirmed as Assistant Secretary for Environmental Management in July 1999, as well as highlight some of our accomplishments in the past year and our planned achievements for the current fiscal year.

Meeting the Challenge of the Environmental Legacy

The Environmental Management program is responsible for managing and cleaning up the environmental legacy of the nation's nuclear weapons program and government-sponsored nuclear energy research. If there is one common theme at all of the very diverse facilities across the country where the EM program is conducting cleanup, it is the challenge presented by the magnitude and complexity of the task we face in managing large volumes of nuclear wastes, safeguarding materials that could be used in nuclear weapons, and remediating extensive surface and groundwater contamination.

In total, we are responsible for addressing an estimated 1.7 trillion gallons of contaminated groundwater and 40 million cubic meters of contaminated soil and debris. EM is responsible for safely storing and guarding more than 18 metric tons of weapons-usable plutonium, enough for hundreds of nuclear weapons. Our inventory includes over two thousand tons of intensely radioactive spent nuclear fuel, some of which is corroding. EM is also responsible for storage, treatment, and disposal of radioactive and hazardous waste, including over 340,000 cubic meters of high-level waste stored at the Hanford, Idaho, New York and Savannah River sites; and for deactivation and decommissioning of about 4,000 facilities that are no longer needed to support the Department's mission. In addition, the EM program also has responsibility for critical nuclear non-proliferation programs to accept and safely manage spent nuclear fuel from foreign research reactors that contains weapons-usable highly enriched uranium.

Completing the cleanup of the legacy from nuclear weapons production will meet our legal and moral obligation to those communities and states that supported our national defense effort and helped win both the Second World War and the Cold War. Completing this cleanup will allow us to turn lands and facilities to other pub-

lic uses and allow the Department to focus on its science, security, and energy missions.

Principles and Priorities for the EM Program

The actual tasks of remediating contamination and storing, treating, and disposing of wastes are performed exclusively in the field, at the sites where the contamination and wastes are located. The role of Headquarters is to provide program guidance and management as to how this work will be conducted. I have established several management principles and priorities that will guide the program under my leadership. They are:

—Safety first;
—Reduce risks;
—Meet our commitments;
—Accelerate site cleanup and project completion; Strengthen project management;
—Integrate nuclear waste and materials management and operations to take advantage of site capabilities across the DOE complex;
—Build public confidence and involve stakeholders in our cleanup decisions and actions;
—Develop an effective long-term stewardship program—at many sites after cleanup is completed the Department will retain responsibilities for long-term monitoring and maintenance; and
—Apply the best science and technology to solve technical problems and reduce costs.

The EM Headquarters office has recently been organized to implement these principles and better align the EM program with our goals. The new structure groups management of closure sites together to ensure the lessons learned about facilitating closure are shared across the complex. It also establishes specific organizations focused on safety, project management, and long-term stewardship, as well as science and technology and cross-complex integration. The re-organization, formally in place last November, provides stability to an organization that had seen significant personnel reductions in the past few years and establishes permanent managers and staff throughout the organization.

We will continue to work towards cleaning up as many of the remaining contaminated sites as possible by 2006, safely and cost-effectively. By working toward this goal, we not only reduce the hazards presently facing our workforce and the public, but also reduce the long-term financial burden on the taxpayer. For every year that a site remains open because cleanup has not been completed, we are paying a "mortgage" of overhead costs for activities such as site security, facility operations, personnel, and safety. Our budget request, and our organization in Headquarters, is now structured to emphasize site closure, and site/project completion at our larger sites and our sites with continuing missions.

Progress and Accomplishments in Cleaning Up and Closing Sites

I am pleased to report that our program has produced substantial cleanup results at contaminated nuclear facilities around the country. Our accomplishments reflect the program's continued commitment to performance-based management, establishing stretch goals and performance measures that demonstrate our progress in on-the-ground environmental cleanup and meeting our goals. For example:

—The Waste Isolation Pilot Plant (WIPP) opened and began disposal operations in March 1999. Since its opening through November 1999, 44 shipments of transuranic waste have been sent to WIPP for disposal from Los Alamos National Laboratory, Rocky Flats, and Idaho National Engineering and Environmental Laboratory (INEEL). We expect that the Hanford and Savannah River sites will begin shipping waste to WIPP in fiscal year 2000.
—We continued to successfully operate two high-level waste vitrification facilities in South Carolina and at West Valley in New York where last year we produced 248 canisters of vitrified high-level waste. In fiscal year 2000, we expect to produce at least 200 more canisters at the Savannah River Site facility, bringing the total canisters poured at this facility to more than 900 canisters since the facility began operating in 1996. We will vitrify five canisters of waste at West Valley.
—At Rocky Flats, we continued to make great strides towards meeting our 2006 closure goal, including completing shipments of plutonium pits to the Pantex Plant in Texas and shipments of highly enriched uranium to the Y–12 facility in Oak Ridge Tennessee. In addition, we demolished a plutonium research facility and made 12 shipments of transuranic waste to WIPP.

—EM completed its cleanup work at three more sites in fiscal year 1999 and will clean up two more sites by the end of fiscal year 2000. This will bring the number of completed sites to 71, with 42 sites remaining.
—At the Hanford Site, we have made significant progress in reducing the urgent risks associated with the 177 underground high-level waste tanks at the Hanford site, some of which are known to have leaked to the surrounding soils threatening groundwater and the nearby Columbia River. We resolved high priority safety issues in several tanks, such as the generation of high heat in one tank and a rise in the surface level in another. We are also interim stabilizing single-shell tanks, transferring free liquids in the tanks to more secure double-shelled tanks. We have begun pumping free liquids from six single-shelled tanks, meeting all milestones in the Consent Decree with the State of Washington. Also at Hanford, we continue stabilization activities to reduce the risks posed by unstable plutonium materials. In addition, in August 2000 we expect to make a decision on whether to authorize the construction of the privatized facility to vitrify the liquid tank waste.
—At Weldon Spring in Missouri, we finished treatment of waste pit sludge in the Chemical Stabilization and Solidification Facility in fiscal year 1999, with about 180,000 cubic yards of treated sludge placed in the disposal facility, and the treatment facility was decommissioned. We plan to complete waste placement in the 1.5 million cubic yard capacity disposal facility in fiscal year 2000, with only the completion of the facility cover remaining.
—At INEEL, we completed construction of a dry storage facility for the Three Mile Island spent nuclear fuel and began transfer of the fuel to the facility. We also made four shipments of transuranic waste to WIPP, meeting a major milestone in the settlement agreement with the State of Idaho, signed in October 1995. In addition, we expect to begin construction on the Advanced Mixed Waste Treatment facility in fiscal year 2000.
—In fiscal year 1999, we disposed of 49,000 cubic meters of low-level waste, 14,000 cubic meters of mixed low-level waste, and 282 cubic meters of transuranic waste at disposal facilities at DOE sites and at commercial disposal facilities.
—At the Mound Plant in Miamisburg Ohio, we continue progress toward the 2004 closure goal. In fiscal year 1999, we completed shipment of all remaining legacy low-level and mixed low-level waste from the site. By the end of fiscal year 2000, we expect to complete the removal of all remaining nuclear materials from the site and complete decommissioning of three more buildings.
—Also at Mound, we transferred two buildings and 27 acres to the City of Miamisburg in fiscal year 1999, and we expect to deed over two more buildings and another 100 acres in fiscal year 2000.
—We awarded the privatization contract for the design, construction, operation and capping of a waste disposal facility at Oak Ridge for up to 400,000 cubic meters of contaminated soils and debris. In addition, we expect to issue a Record of Decision for the transuranic waste treatment project at Oak Ridge.
—In support of non-proliferation goals, we have now completed a total of fourteen shipments of spent nuclear fuel from foreign research reactors in 23 countries including Brazil, South Korea, and Venezuela.
—On-the-ground use of new innovative technologies continues to increase. During fiscal year 1999, DOE sites used innovative technologies 218 times in cleanup activities. For example, the Segmented Gate System (SGS) was successfully used for projects at Sandia National Laboratories and Los Alamos. This technology is a computer-controlled mechanical sorter that separates clean soil from contaminated waste streams, thereby significantly reducing the volume of waste to be packaged and disposed of, and reducing costs by up to 75 percent.
—Also in fiscal year 1999, 40 innovative technologies were made available for use for the first time. One such technology is the Multifunction Corrosion Probe now being used in the tanks at Hanford. This technology helps reduce the volume of tank waste by allowing workers to directly monitor the rate of tank corrosion and add only the minimum amount of sodium hydroxide necessary to inhibit corrosion.
—During fiscal year 2000, the sites expect to deploy new technology at least 60 times in cleanup activities. For example, the Lasagna electro-osmosis process will be used to remove groundwater contaminants at the Paducah Gaseous Diffusion Plant.

THE FISCAL YEAR 2001 REQUEST

The fiscal year 2001 budget request of $5.803 billion in traditional budget authority and $515 million in budget authority to support privatization projects will enable EM to continue making progress across the country. In fiscal year 2001, we will continue to give priority to high risk problems such as stabilizing and ensuring the security of plutonium at several sites; stabilizing tanks containing high-level radioactive waste; and ensuring the safe storage of spent nuclear fuel, including foreign research reactor fuel in support of non-proliferation goals. We will continue to move closer to the goal of completing the cleanup of Rocky Flats, the Mound Site and Fernald in Ohio, and Weldon Spring in Missouri by 2006. We will complete the cleanup of three additional DOE sites. We will accelerate the cleanup of the uranium enrichment plants at Portsmouth, Ohio, and Paducah, Kentucky, and will significantly increase the number of shipments to WIPP. We also are requesting funds to begin construction of the privatized high-level waste vitrification plant at the Hanford site.

Safety First

The safety of our workers is our highest priority. We will not compromise the safety of our workers in any of our activities. As our cleanup accelerates, we must ensure that we have truly implemented and institutionalized Integrated Safety Management—the systems, procedures, and behavioral attitudes in place to continually improve our safety performance. In the recent EM reorganization, I created the Office of Safety, Health and Security to consolidate EM's resources, expertise and experience in these areas. A primary objective of this office is to ensure all EM personnel understand their responsibilities in the areas of safety and security so that these concepts and practices are integral to all EM programs and activities. Safety culture flows from actions by the senior management of an organization. These actions enforce understanding at every level that constant attention to safety has incremental beneficial effects, and the absence of these actions can almost guarantee adverse consequences. We are improving our safety orientation and performance as we strive to become a leader in safety throughout the DOE complex, with an approach to and record in safety that meets or exceeds the best private industrial firms. Managers at all levels are responsible for monitoring, taking appropriate actions to ensure that a commitment to safety is engendered throughout the organization, and participating in feedback systems so that continual improvements can be realized. We will be successful when we consider safety in everything we do—whether it is budget allocation, work formulation and prioritization, or staffing.

Making more Progress in Reducing Risks

Move spent nuclear fuel from K Basins at Hanford.—The fiscal year 2001 request furthers our efforts to protect the Columbia River by beginning the removal of spent nuclear fuel from K-Basins at the Hanford Site in Washington. Our request will enable us to meet the milestone to begin fuel removal in November 2000. This project will carry out a first-of-a-kind technical solution to move 2,100 metric tons of corroding spent nuclear fuel from at-risk wet storage conditions in the K-East and K-West basins adjacent to the Columbia River into safe, dry storage in a new facility away from the river.

Achieving this milestone will represent a significant accomplishment for a project that previously suffered from technical and management problems that delayed schedules and increased costs. We are now on track with a new baseline established in December 1998 that provides a realistic means to move this spent fuel to a safer facility and location.

Move Three Mile Island Spent Nuclear Fuel to Safe Storage.—At INEEL, we will complete the transfer of Three Mile Island spent nuclear fuel to dry storage and the transfer of spent nuclear fuel at the Idaho Nuclear Technology and Engineering Center (INTEC) from aging, deteriorating underwater storage to safer storage facilities. These transfers reduce environmental and safety risks and fulfill commitments in the Idaho Settlement Agreement.

Stabilize Plutonium at Hanford and Savannah River Sites.—We are reducing risks by stabilizing plutonium-bearing materials at the Hanford and the Savannah River Sites. At Hanford, we will continue stabilization of plutonium-bearing materials and oxides at the Plutonium Finishing Plant. In addition, we will begin operating the bagless transfer system for packaging plutonium-bearing materials and complete brushing and repackaging of plutonium metal inventory. These stabilization activities support our commitment to the Defense Nuclear Facilities Safety Board and are a critical step in the deactivation of Plutonium Finishing Plant, which will significantly reduce mortgage costs at Hanford.

The request supports critical work to stabilize plutonium residues and other plutonium-bearing materials from the Savannah River Site and other sites across the complex, including plutonium residues and other plutonium-bearing materials from the Rocky Flats site in Colorado, in the F-Canyon and H-Canyon at Savannah River. Stabilization of these "at risk" materials is critical in resolving health and safety concerns surrounding these radioactive materials, since they are now in liquid or unstable forms unsuitable for long-term storage; supporting closure goals at Rocky Flats; and responding to Defense Nuclear Facilities Safety Board recommendations.

Stabilize High-Level Waste in Underground Storage Tanks at Hanford.—In fiscal year 2001, we will continue improving safety of the high-level waste tanks by resolving high priority safety issues such as flammable gas generation and continuing interim stabilization work that involves pumping liquid waste from single-shelled tanks into double-shelled tanks. The remaining two tanks which are suspected of having leaked in the past will be pumped during fiscal year 2001.

Receive Foreign Research Reactor Fuel.—The fiscal year 2001 request continues support for the return of spent nuclear fuel containing uranium originally enriched in the United States from foreign research reactors around the world. This program reduces the threat of nuclear proliferation by ensuring enriched uranium will not be used to make nuclear weapons. It also supports a U.S. nuclear weapons nonproliferation policy calling for the reduction and eventual elimination of the use of highly enriched uranium in civil programs worldwide.

Spent nuclear fuel will be shipped from research reactors in Argentina, Austria, Italy, Sweden, Denmark, Germany and Japan to the United States in fiscal year 2001, and the Department is working with other interested, eligible foreign research reactors in The Netherlands, Chile, and Indonesia in an attempt to include additional countries in the 2001 shipment schedule.

Blend-down of Highly Enriched Uranium at Savannah River.—The fiscal year 2001 EM request includes $37.9 million to support a creative approach to convert the Department's store of surplus highly enriched uranium to low enriched uranium for use as a commercial reactor fuel, offering a means to eliminate the proliferation risk posed by this weapons-grade material. The "Blend-Down" project, managed by the Office of Fissile Materials Disposition, is a collaboration between DOE and the Tennessee Valley Authority (TVA), which will use the converted fuel in its nuclear power reactors. The project is highly beneficial to both agencies. First, blending down the highly enriched uranium to low enriched uranium furthers DOE's non-proliferation goals. Second, it will reduce DOE's long-term liabilities and risks associated with storing the material as highly enriched uranium or converting it to a waste form for disposal. Third, transferring the low enriched uranium solution to TVA's vendors will satisfy a DOE commitment to the Defense Nuclear Facilities Safety Board. Fourth, TVA will realize significant savings as compared to buying virgin fuel on the open market. Depending on actual program costs and uranium market prices, DOE may ultimately receive a share of the savings.

The request will provide for a loading station at the Savannah River Site to transfer the uranium solutions from the H-area tanks to shipping containers and fund other infrastructure requirements for the project at the site. The project will use existing reprocessing facilities at the site and, as currently planned, will not extend the life of Savannah River reprocessing facilities or increase EM operational funding requirements.

Meeting our Commitments

At the fiscal year 2001 request level of $6.318 billion, EM will be substantially in compliance with applicable environmental and other legal requirements. Most of our activities are governed by federal and state environmental statutes and regulations and enforceable agreements between the Department and federal and state agencies. We are committed to complying with these legal requirements and agreements. In addition, we plan to meet our commitments to the Defense Nuclear Facilities Safety Board. In several cases, we need to work closely with our regulators and the Board as well as our stakeholders and Tribal Nations, on the appropriate schedule and milestones for our program. We will continue to work to reduce costs and accelerate schedules so that we can meet our compliance requirements in the most practical and cost-effective manner.

Accelerating Site Cleanup and Project Completion

Complete More Site Cleanups.—In fiscal year 2001, we will continue to make progress toward the goal of cleaning up as many of the remaining contaminated sites as possible by 2006, safely and cost-effectively. At the start of fiscal year 1997, shortly after the EM program first established this goal, 61 of the 113 sites in the

EM program required active cleanup. We now have completed cleanup at 69 sites, and have 44 sites that still require active cleanup. We plan to complete cleanup at two additional sites this fiscal year and at three sites in fiscal year 2001—Argonne National Laboratory-West in Idaho, Monticello Remedial Action Project in Utah, and Grand Junction Site in Colorado. In fact, we are accelerating the cleanup at Grand Junction to 2001 from 2002 as initially planned. We plan to reduce the number of cleanup sites remaining to 39 by the end of fiscal year 2001.

Complete Vitrification of High-Level Waste at West Valley.—At the West Valley Demonstration Project in New York, we will achieve significant milestones in carrying out the Department's responsibilities at this once privately-owned commercial nuclear processing facility. We will complete high-level waste vitrification processing, producing the final five canisters, and begin deactivation of the vitrification facility. At the end of the vitrification campaign, the Department will have vitrified 600,000 gallons of liquid high-level waste, reducing risks to the workers and public by converting the waste into a stable form. We will also complete the shipment of all spent nuclear fuel to INEEL. Removing the 125 spent fuel elements from the spent fuel pool at West Valley is a prerequisite for decontamination and decommissioning of facilities.

Make Progress Toward Closing Rocky Flats by 2006.—The budget request of $664.7 million supports closure of Rocky Flats by December 15, 2006, the closure date targeted in the new cost-plus-incentive-fee contract with Kaiser-Hill that took effect February 1, 2000. The Rocky Flats site is the largest site challenged to accelerate site cleanup and achieve closure in 2006 and, to date, significant progress has been made toward making this goal a reality. Despite the many challenges facing the closure of Rocky Flats, we are confident that the terms and conditions of the closure contract, including the schedule and performance incentives, better position us to achieve our goal of realizing substantial savings and dramatic risk reduction through accelerated closure. Critical elements in the closure strategy are stable funding for the life of the project and the ability to move nuclear materials and radioactive wastes from the site, which requires that other sites—often DOE sites—are available and prepared to accept the materials. The coordination of these planned shipping campaigns to the receiver sites demonstrates the Department-wide commitment to the goal of achieving accelerated closure of Rocky Flats.

In fiscal year 2000, we began operating under a baseline that supports closure in 2006, which replaced a baseline for completing cleanup in 2010, and our activities and schedules for fiscal year 2001 are consistent with this baseline. Under this baseline, by the end of 2001, we will:

—complete 98 percent of plutonium residues packaging for shipment;
—complete the draining of the liquid plutonium from the pipes in Building 771 and remove the pipes in preparation for demolishing the building;
—complete 88 percent of plutonium metal and oxides packaging for shipment;
—complete 80 percent of plutonium metal and oxides off-site shipments.

The new closure contract, valued at nearly $4.0 billion plus incentive payments, requires Kaiser-Hill to submit a revised baseline reflecting the terms and conditions of the contract by the end of June 2000. The specific activities detailed within the fiscal year 2001 request will be adjusted pending review and acceptance of the new baseline.

Under the new contract, the Department and Kaiser-Hill are better positioned to safely achieve site closure by 2006. We have clearly come a long way since the previous contractor estimated a few years ago that it would take $30 billion and 30 years to complete cleanup at Rocky Flats.

Increase Shipments to WIPP.—The fiscal year 2001 budget request of $194.5 million, a $13 million increase over the fiscal year 2000 appropriation, supports more shipments of transuranic waste to WIPP in New Mexico. The fiscal year 2001 request supports shipments of contact-handled transuranic waste at a rate of 13 shipments per week by the end of fiscal year 2001, a significant increase over the end-of-year rate of two shipments per week in fiscal year 1999, and five shipments per week in fiscal year 2000. The number of shipments will increase from about 120 in fiscal year 2000 to about 485 in fiscal year 2001, from Rocky Flats, Los Alamos, INEEL, Hanford, and the Savannah River Site. We will also be completing remote-handled transuranic waste equipment upgrades and regulatory submittals, in preparation for beginning remote-handled waste shipments in fiscal year 2002.

Begin the Construction Phase of High-level Waste Treatment Facility at Hanford.—The fiscal year 2001 request provides $450 million in budget authority to support the privatization project to develop treatment facilities to vitrify at least 10 percent by volume of the 54 million gallons of high-level waste now stored in underground tanks at the Hanford Site in Washington, a project managed by DOE's Office of River Protection. This significant increase over the request of $105.7 million in the

fiscal year 2000 appropriation anticipates a decision in fiscal year 2000 authorizing the contractor, BNFL, Inc., to proceed with the start of the construction phase for the facilities. The project is now in a phase in which the contractor will complete 30 percent of the design process, obtain financing, and submit a fixed-price bid. The Department will evaluate the contractor's proposal, as well as determine whether all other critical elements, such as the delivery of the waste to the facility, are in place and ready to support the project and the schedule. Based on this in-depth evaluation, the Department will make a decision, expected in August 2000, on whether to proceed. If the Department authorizes construction to proceed, the amount requested in fiscal year 2001 will allow the contractor to initiate long-lead procurements and begin construction.

We are requesting less for fiscal year 2001 than previously indicated because design work has progressed at a slower pace than originally anticipated. We are confident that we will have sufficient design completed to make the authorization to proceed decision in August as scheduled, but we intend to develop a robust and complete design before beginning construction and long-lead procurement. As a result, construction and long-lead procurement activities will not be at the same pace in fiscal year 2001 as indicated previously. This approach will provide the Department and the Congress with additional confidence in the project before we move forward.

In addition, we are requesting $382 million in traditional budget authority for the Office of River Protection, a $44 million increase from last year. This funding enables the Department to mitigate the hazards associated with the high-level waste in the tanks and safely maintain them. It also funds the preparation of the tank farm retrieval system that will deliver tank waste to the privatized treatment facility. The schedule for developing the waste delivery system and preparing waste must be fully integrated with the privatized facility schedule in order for the treatment to begin on time. We will be determining the readiness of this waste feed system when making the decision next August regarding the authorization-to-proceed with a treatment facility. This part of the project will continue to be funded through traditional budget authority, as reflected in this year's request.

Accelerate Cleanup at Portsmouth and Paducah.—Our fiscal year 2001 budget request responds to concerns raised by investigations by DOE's Office of Environment, Safety and Health (EH) about the pace of cleanup, and fulfills the Secretary's commitment to seek additional funds to accelerate cleanup of environmental contamination at the gaseous diffusion plants at Paducah, Kentucky and Portsmouth, Ohio. This also meets the recommendations in the Conference Report for the fiscal year 2000 Energy and Water Development Appropriations Act to substantially increase funding for cleanup of these two sites. These plants were used to enrich uranium for defense and energy purposes and were transferred to the U.S. Enrichment Corporation in 1998.

The Department is requesting $78 million for Paducah in fiscal year 2001, nearly $24 million more than in fiscal year 2000 and almost a two-fold increase from the appropriation in fiscal year 1999. These funds will allow us to complete the removal of "Drum Mountain," a large scrap pile containing thousands of drums, which is a suspected source of contamination of the Big and Little Bayou Creeks from surface run-off. We will remove the remaining 51,000 tons of contaminated scrap metal stored in outside storage areas, allowing characterization of the ground underneath the piles. The funds will be used to continue stabilization activities in two shut down buildings. We will also be able to characterize and dispose of the remaining 9,000 drums of low-level radioactive waste, some of which are currently stored in deteriorating drums, and ship 2,000 drums of mixed waste to an off-site disposal facility. These activities address specific concerns raised by the EH investigation team.

The request provides $76.2 million for cleanup activities at the Portsmouth Gaseous Diffusion Plant, about $30 million more than in fiscal year 2000. This funding will allow the site to complete final corrective actions for the groundwater plumes on the south side of the site containing such chemical contaminants as polychlorinated byphenyls (PCBs), trichloroethylene (TCE), and chromium and begin design and construction for soil and groundwater contamination on the north side. We will also dispose of contaminated soil and accelerate characterization and disposal of mixed hazardous and radioactive waste. The increased funding will keep us on track with completing environmental restoration activities by fiscal year 2002 and waste management activities by fiscal year 2006.

We also have submitted a supplemental request for $16 million in fiscal year 2000 to accelerate work at the Portsmouth and Paducah plants. We appreciate this Subcommittee's favorable consideration of our request.

Make Progress Toward Closure at Ohio Sites.—At the Fernald Environmental Management Project, we will continue accelerating closure of this former uranium

production facility. We will place a permanent cap on Cell 1 of the On-site Disposal Facility using an innovative capping technology. This facility, designed to have seven cells with an option for an eighth, is enabling us to accelerate disposal of contaminated soil and debris resulting from cleanup and building demolition.

At the Mound Plant in Ohio, we will accelerate tritium decontamination in buildings on the "critical path" to closure, completing decontamination of three of eight acres in the Semi-Works building, one of three significant contaminated buildings that comprise the tritium complex. We will also continue demolition of surplus buildings. Of the 107 buildings to be removed from the site, approximately 50 percent will be either demolished or auctioned off by fiscal year 2001.

Begin Work at the Uranium Mill Tailings Site in Moab.—The budget request also includes a proposal that the Department undertake cleanup of a uranium mill tailings site in Moab, Utah, formerly owned by the now-bankrupt Atlas Corporation. The tailings contain low-levels of radioactivity from uranium, radium and their decay products, as well as hazardous constituents that present a small but continuing risk for contamination of the Colorado River. There have been concerns expressed by the U.S. Fish and Wildlife Service, as well as local communities and downstream states, about the risks posed to the river. Located next to the river, the site is in a major tourist area because of its proximity to two National Parks. The Department believes it is important to preserve these national treasures and restore the environment. Our experience with cleanup of older uranium mill tailings sites, many of which were located along streams and rivers, makes the Department well-suited to this task. We are proposing to work with Congress to develop legislation that would direct the Department to undertake this $200 to $300 million cleanup project to relocate and stabilize the Moab tailings at a secure site, away from the river. We are requesting $10 million in fiscal year 2001 in the non-defense account to initiate activities at this site.

Strengthening Project Management

Project management principles and practices provide the discipline for EM to achieve its cleanup goals efficiently. To effectively oversee and manage our contractor workforce, we must be knowledgeable of and employ state-of-the-industry project management practices. I have created an Office of Project Management within EM to set project management policies and procedures, conduct independent project reviews, and train our staff in project management practices. This office is working with organizations such as the Construction Industry Institute, the Project Management Institute, and the National Aeronautics and Space Administration, to bring state-of-the-art project management tools and training into the EM program to enable us to better manage our projects.

Many of our sites have improved their project baselines and project management practices in the last year. The Oak Ridge Operations Office completed a comprehensive revision of their baselines that provides the most complete and thorough baselines to date for their sites. The Idaho Operations Office implemented a process for re-estimating about half of their baselines, resulting in higher confidence in their estimates. A new baseline for the project at the Hanford site to move spent nuclear fuel from the aging K-Basins to safer, dry storage was established in fiscal year 1999 that provided the first realistic and achievable cost and schedule to accomplish the transfer of the fuel. The Rocky Flats site revised its baseline to reflect a 2006 closure rather than the 2010 closure date in last year's baseline. Additional improvements in baselines are under way this year at Idaho and Rocky Flats with selected improvements elsewhere.

Over the past year we have developed and implemented a system of internal controls. We are requiring that all work be organized into discrete projects and that baselines be documented, and have established a change-control system. EM has reinstituted a rigorous "change-control" and critical decision process with defined thresholds for approval to enable us to better control our projects. Finally, I am formalizing quarterly reviews of major systems and other high visibility projects.

The Department has created the Office of Engineering and Construction Management within the Office of the Chief Financial Officer to provide a Department-wide focus on project management policies, tools, and procedures. EM is working closely with this office to develop and implement a new DOE Order governing project management. Included in this Order will be enhanced policies on change control, critical decision approval by the Deputy Secretary for Major Systems, quarterly project reviews, and monthly project performance reporting.

Integrating Waste and Materials Management

Sharing information and the unique capabilities for managing and treating nuclear wastes and materials at many of our sites is critical to our success. Our inte-

gration initiative seeks to consolidate treatment, storage and disposal facilities and use available capacity rather than construct new facilities; apply innovative technologies at multiple sites; and apply lessons learned and site successes complex-wide.

We have several key initiatives to facilitate site closure by moving materials to other sites for interim storage, with requested funds supporting the necessary activities in both the receiving and the sending sites. The Department has made substantial progress in consolidating storage of certain special nuclear materials from the Rocky Flats site in Colorado. In fiscal year 1999, Rocky Flats completed shipments of plutonium weapons pits to the Pantex Plant in Texas and highly enriched uranium to the Y–12 Plant in Oak Ridge, Tennessee. Rocky Flats also began shipments of plutonium scrub alloy to the Savannah River Site in South Carolina in fiscal year 1999; we will complete these shipments this year. This consolidation of nuclear materials has supported our 2006 closure goal for Rocky Flats and reduced the cost of maintaining security for the remaining special nuclear materials. The Department is also preparing to ship containers of excess plutonium to the Savannah River Site for storage in modified K-Reactor Area facilities. These shipments are scheduled to begin in fiscal year 2000.

The Department has made progress in identifying sites that will treat and dispose of similar waste generated by sites across the DOE complex. In December 1999, after extensive technical analyses and consultation with state representatives and other stakeholders, we announced our site preferences for disposal of DOE low-level and mixed low-level waste based on the Waste Management Programmatic Environmental Impact Statement. This allowed us to complete a formal Record of Decision in February 2000 on low-level and mixed low-level waste treatment and disposal facilities, after further consultations with the affected states. The decisions, when implemented, will result in more efficient waste disposal operations as well as development of capabilities that do not currently exist. These capabilities are needed to move waste from storage to disposal and support cleanup and closure of sites. The Department also has 340,000 cubic meters of high-level waste at four sites, and is storing spent fuel at a number of sites. These will be safely stored until a geological repository is available. The Department is now evaluating the suitability of Yucca Mountain in Nevada as a repository.

The opening of WIPP in New Mexico for disposal operations in March 1999 provides a good example of the benefits of integration. For decades a large amount of transuranic waste has been stored at about two dozen sites across the United States. Beginning disposal operations at WIPP provides a means for the Department to permanently dispose of this long-lived radioactive waste while reducing the number of sites where this waste is stored. WIPP is critical for closing sites like Rocky Flats; for meeting compliance obligations for more than a dozen other sites, including the Idaho Settlement Agreement; and for reducing storage costs and risks to the public. In October 1999, the State of New Mexico Environment Department issued a final hazardous waste permit that became effective in November 1999. The permit allows WIPP to dispose of mixed transuranic waste. The Department is working to implement the permit while challenging several provisions that we believe are inappropriate, such as financial assurance requirements and certain technical requirements. It is critical that these issues are successfully resolved so that our waste management commitments and goals for WIPP can be met. From March 26, 1999, when WIPP began disposal operations until November 1999 when shipments were temporarily stopped to align the program with requirements in the newly-issued RCRA permit, WIPP received 44 shipments of non-mixed waste from three sites—Los Alamos, Rocky Flats, and INEEL.

Finally, the transport of radioactive waste and material between sites is critical to the success of our integration priorities. Our transportation program, which successfully moved spent nuclear fuel containing U.S. enriched uranium from research reactors around the world to the U.S. for safe storage, is applying its success to other DOE shipments. EM is working with other DOE program offices and with the sites to develop a corporate strategy that will enable us to identify future packaging and transportation needs, to support aggressive shipping schedules, and to utilize our transportation assets more efficiently.

Building Public Confidence

We have found that performing good technical work is not enough. Getting the job done requires cooperation with regulators and others outside of DOE that have a stake in our actions. By working cooperatively with regulators, stakeholders, local communities and the Tribal Nations, we have improved the efficiency of the EM program and have been able to meet our regulatory commitments in a more efficient and cost-effective way. Our request continues support for effective public participa-

tion through continued relationships with states, site-specific and national advisory boards, and Indian tribes potentially affected by our activities.

Developing Effective Long-Term Stewardship

As the Department completes stabilization, cleanup and disposal of waste, we must consider the next and final stage in the cleanup process: meeting our enduring environmental protection obligations through long-term stewardship. At most sites the Department is performing cleanup that will make the land available for other uses, but not necessarily unrestricted use, because of the presence of residual contaminants or deliberate entombment of waste or facilities. The Department has been completing cleanup that results in substantial risk and maintenance cost reductions. Similar to the cleanup of private sites, cleanup to levels allowing for unrestricted use often cannot be achieved at DOE sites for economic or technical reasons and has not been demanded by regulators. The Department has been able to take advantage of the Superfund administrative reforms developed by the U.S. Environmental Protection Agency (EPA) to allow anticipated future land use to be considered in developing cleanup remedies.

The goal of long-term stewardship is the sustainable protection of human health and the environment after cleanup, disposal or stabilization is completed. A robust long-term stewardship program emphasizes good project management, the value of applying the best science and technology to manage residual hazards, and increasing public confidence through effective involvement of state and local governments, Tribal Nations, and stakeholders in long-term stewardship decision making. A reliable long-term stewardship program can also provide confidence to regulators and the public that non-removal remedies are acceptable because the Department can be trusted to care for the sites after the waste is contained in place.

Most of the explicit long-term stewardship activities in the field are conducted by our staff in Grand Junction, Colorado. This office is responsible for long-term stewardship at approximately 30 sites across the United States in fiscal year 2000. These sites range from large uranium mill tailings sites (mostly in Colorado, Arizona, Utah, and New Mexico), former nuclear weapons productions facilities (e.g., Pinellas, Florida), and commercial nuclear fuel cycle facilities (e.g., AMAX in Parkersburg, West Virginia) that did work for the federal government.

During the past year, the Department has taken action to strengthen its long-term stewardship program. First, we increased the budget for long-term stewardship to respond to the greater demand resulting from the completion of more cleanups. Our fiscal year 2001 budget request for the long-term stewardship program, managed by our Grand Junction Office, is more than $5 million, an increase of approximately 60 percent over the fiscal year 2000 budget level. The budget largely reflects the expected transition of new responsibilities to the Grand Junction Office for long-term stewardship of the Monticello and Weldon Spring sites when they complete cleanup. This funding will provide continued cost-effective stewardship of approximately 35 sites in 2001, which is more than a 50 percent increase since 1999, when Grand Junction managed 25 sites. This funding will enable us to comply with Nuclear Regulatory Commission (NRC) permit requirements for long-term surveillance and maintenance for closed uranium mill tailings sites, as well as for increased responsibilities under Superfund and hazardous waste laws for protecting human health and the environment at several additional sites where closure occurred with residual contamination in place.

Second, we recently established an Office of Long-Term Stewardship at our Headquarters office. The office is addressing these emerging challenges with responsibility for field guidance and policy development, technical analysis, and identification of science and technology needs. While this may be the first office addressing long-term stewardship in the federal government, I would suggest to you that it will not be the last. This is because the issues we are grappling with are not unique to the Department of Energy. This new office is located within and funded through our Office of Science and Technology. This reflects the fact that we intend to continue investing in science and technology to help ensure that the protections provided by our remedies can be maintained as cost-effectively as possible for the necessary duration.

There are a number of activities that this office will complete by the end of this year that will help establish the basis for a stronger long-term stewardship program. First, EM is responding to the mandate in the fiscal year 2000 National Defense Authorization Act (NDAA) to report to Congress by October 1, 2000, on the Department's long-term stewardship responsibilities. This report will provide the best available information on the cost, scope, and schedule for long-term stewardship at sites and portions of sites in sufficient detail to undertake the necessary stewardship responsibilities.

Third, we are preparing a study on long-term stewardship pursuant to the lawsuit settlement agreement (Natural Resource Defense Council, et. al. v. Richardson, et. al., Civ. No. 97–963 (SS) (D.D.C. Dec. 12, 1998)). The study will address national, programmatic, and cross-cutting issues related to long-term stewardship.

The management system required for performing long-term stewardship as cost-effectively as possible will likely build on the existing EM system. However, there may also be an additional need for new technologies, new contracting mechanisms, and new specialized personnel to ensure reliable and cost-effective long-term stewardship. This is what we are now examining as we accelerate our efforts to complete cleanup and close more sites, which in turn will require more long-term stewardship.

Solving Problems Through Science and Technology

Our investments in science and technology are providing the scientific knowledge and new technologies necessary to help us reduce the cost and time frame of the complex-wide cleanup effort, and enable us to tackle cleanup problems that had no effective solutions. We are requesting $196.5 million in fiscal year 2001 for investments in both basic and applied research. These funds will target our highest priority needs and will be applied across the spectrum of science and technology work from basic research through deployment among EM's five major problem areas: mixed waste, high-level tank waste, subsurface contamination, deactivation and decommissioning, and nuclear materials.

Our science and technology program has made a significant impact on how we conduct our cleanup operations. Over 75 percent of the approximately 250 innovative solutions made available for use over the past ten years are making real on-the-ground contributions. For instance:

—Site characterization represents a large portion of the cost for environmental restoration activities. We now have very sophisticated, safe methods to identify, characterize, quantify and monitor contamination.

—New remotely operated machines now exist to perform work in conditions that are too hazardous for humans, such as inside radioactive waste tanks.

—Among the new technologies making a difference is a process that uses a concentrated caustic solution to dissolve and remove large quantities of unwanted nonradioactive elements in the sludge, thereby decreasing waste volume (Enhanced Sludge Washing). This process has been selected as the technology to be used to pretreat Hanford tank sludges where it is expected to avoid $4.8 billion in costs compared to other technology choices.

—An in-ground "wall" of iron filings (Permeable Reactive Treatment Wall) has been installed at the Kansas City Plant and Monticello Uranium Mill Site to remove contaminants from groundwater as the water passes through the "wall." This eliminates the need for a more costly "pump and treat" system.

—A third Passive Reactive Barrier is in place in the Solar Ponds at Rocky Flats to destroy nitrates and remove uranium from groundwater; compared against a thirty-year pump-and-treat baseline, this technology will save more than an estimated $20 million. Other reactive barriers deployed at Rocky Flats have been designed to destroy chlorinated solvents and capture radionuclides.

—Optimized use of the existing re-injection well network at the Fernald site in Ohio will enable the site to accelerate groundwater remediation. It may enable us to complete groundwater remediation as much as 17 years ahead of schedule, potentially saving the Department up to $50 million.

EM's science and technology program is also now providing on-the-ground technical assistance, sending some of our top scientists out of the laboratory and into the field to help with specific technical problems. Our first formal technical assistance effort was to identify solutions for groundwater remediation at the Paducah Gaseous Diffusion Plant in Kentucky. The federally-led team, including four national laboratories, responded quickly and produced a strong plan for aggressive remediation of the contaminants in the groundwater and the soil. It is my intention to continue this approach to ensure our cleanup efforts are based on technically defensible decisions.

We are also pleased with the progress of our EM Science Program (EMSP), which is conducted in partnership with DOE's Office of Science. Since its inception in fiscal year 1996, EMSP has invested over $224 million in support of 274 research projects. Our open, competitive approach has ensured the highest caliber of research involving 90 universities, 13 national laboratories, and 22 other governmental and private laboratories. Research is being conducted in 34 states and the District of Columbia, two Canadian provinces, Australia, Russia, the United Kingdom, and the Czech Republic. Our efforts are already providing some encouraging results. For instance, a high-level waste research project, being led by Pacific Northwest National Labora-

tory, focuses on determining the effect of radiation on the stability of glasses and ceramics at an atomic, microscopic and macroscopic level. Because these materials are an integral part of the planning for the final waste forms of a number of DOE waste streams, an understanding of how radioactive materials influence their long-term stability is critical in material selection.

The increasing number of deployments of new technologies to solve real cleanup problems demonstrates that the field is recognizing their value. Preliminary data, now being verified, indicate that during fiscal year 1999, DOE sites used innovative technologies 218 times in cleanup activities, 129 of which were first uses by the site. Of these deployments, 166 were science and technology-sponsored technologies. This is a definite and dramatic improvement over previous years. Since the inception of this program, we have seen nearly 450 deployments at DOE sites of 194 new technologies that were sponsored by EM's science and technology program. The accelerated site technology deployment effort initiated in fiscal year 1998 has contributed to these increased deployments. A total of 47 projects have been initiated that involve a total of 92 technologies. From a total life-cycle EM investment of $300 million, we estimate $1.5 billion in life-cycle savings. Selections for new projects for fiscal year 2000 will be announced in March.

To help ensure that this upward deployment trend continues, the Department is in the process of evaluating contracts with our site contractors to provide better incentives for them to use innovative technologies. We believe contract incentives, coupled with the integration of our technology developers and users, will ensure that the innovative technology we are providing is used to accomplish our cleanup goals cheaper, faster and safely.

CONCLUSION

In conclusion, the Department is making progress in cleaning up the legacy of contamination left from the nuclear weapons production process. We are reducing our most serious risks, accelerating and finishing cleanup at sites across the country, safely storing and safeguarding weapons-usable nuclear materials, and reducing the long-term costs of the program. We will continue to improve our project management, make the most effective use of our unique resources across the DOE complex, use science and technology to reduce costs and schedules, and maintain our focus on worker safety. We pledge to continue to work closely and cooperatively with the Congress to ensure that this progress continues and that we can meet the challenges ahead in the most effective way.

APPENDIX A—SUMMARY OF THE FISCAL YEAR 2001 BUDGET

The total fiscal year 2001 budget request for the Department of Energy's Environmental Management Program is $5.8 billion in traditional budget authority and $515 million of privatization funding. The fiscal year 2001 appropriation will fund cleanup at sites in 19 states across the Nation. Five sites receive two-thirds of Environmental Management funding—Savannah River Site in South Carolina, the Richland Operations Office Hanford Site and Office of River Protection at the Hanford Site in Washington, Rocky Flats in Colorado, Idaho National Engineering and Environmental Laboratory in Idaho, and Oak Ridge Reservation in Tennessee.

We are requesting $4,551.5 million in Defense Environmental Restoration and Waste Management (including $420 million for the Federal contribution to the Uranium Enrichment Decontamination and Decommissioning Fund); $1,082.3 million in the Defense Facilities Closure Projects; and $515 million in Defense Environmental Management Privatization. This totals $5,633.8 million in traditional budget authority and $515 million for privatization funding in the Defense accounts. The current appropriations levels in fiscal year 2000 are $4,467.3 million in Defense Environmental Restoration and Waste Management; $1,060.4 million in the Defense Facilities Closure Projects; and $188.3 million in Defense Environmental Management Privatization.

Our fiscal year 2001 budget proposal provides details on each project, including performance measures, which we use to hold managers accountable, and expect to be held accountable by Congress. We would like to summarize the budget request and some major activities for several sites:

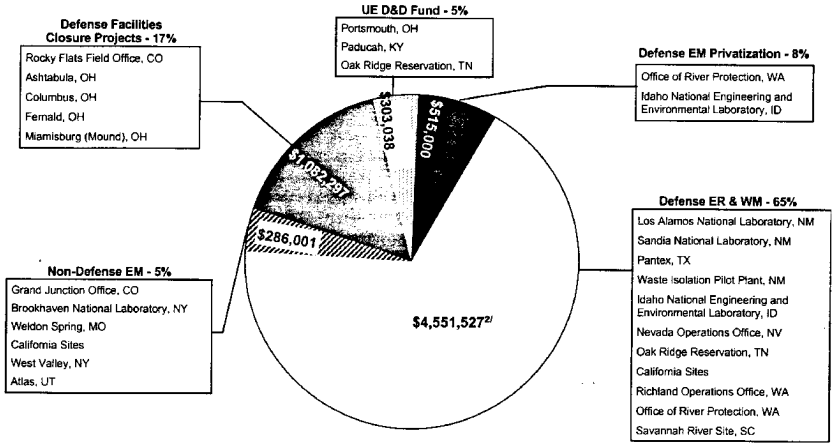
1. Savannah River Site, South Carolina
2. Hanford Site, Washington
   —Office of River Protection
   —Richland Operations Office
3. Rocky Flats Environmental Technology Site, Colorado
4. Idaho National Engineering and Environmental Laboratory, Idaho
5. Oak Ridge Reservation, Tennessee

6. Fernald Environmental Management Project, Ohio
7. Waste Isolation Pilot Plant, New Mexico
8. West Valley Demonstration Plant, New York
9. Los Alamos National Laboratory, New Mexico
10. Miamisburg Environmental Management Project (Mound), Ohio
11. Paducah Gaseous Diffusion Plant, Kentucky
12. Portsmouth Gaseous Diffusion Plant, Ohio
13. Nevada Test Site and Operations Office, Nevada
14. Weldon Spring Remedial Action Project, Missouri
15. Brookhaven National Laboratory, New York
16. California Sites.

EM's Five Appropriation Accounts

Distribution of the FY 2001 Request[1/]

(Dollars in Thousands)



Total FY 2001 Request: $6,317,863

[1/] Listing of sites is not complete; Funding amounts are net of all adjustments.
[2/] Includes $420 million for the contribution to the Uranium Enrichment D&D Fund.

FY 2001 EM Budget Request by State

Dollars in Thousands

State	FY 2000 Current Appropriation	FY 2001 Request						
		Defense Facilities Closure	Defense ER&WM	Non-Defense EM	D&D Fund	Subtotal Traditional BA	Privatization	Total
Alaska	$1,591	$0	$7,281	$0	$0	$7,281	$0	$7,281
Arizona	3,811	0	0	8,900	0	8,900	0	8,900
California	82,705	0	51,604	32,600	0	84,204	0	84,204
Colorado	688,824	664,675	810	13,255	0	678,740	0	678,740
Florida	2,787	0	7,522	0	0	7,522	0	7,522
Idaho	402,773	0	449,403	2,467	0	451,870	90,092	541,962
Illinois	21,164	0	914	10,069	0	10,983	0	10,983
Iowa	260	0	0	0	0	0	0	0
Kentucky	55,397	0	1,200	0	78,000	79,200	0	79,200
Mississippi	551		1,229	0	0	1,229	0	1,229
Missouri	53,543	0	3,500	53,116	0	56,616	0	56,616
Nevada	83,095	0	80,232	0	0	80,232	0	80,232
New Jersey	3,034	0	0	0	0	0	0	0
New Mexico	312,920	0	338,795	6,543	0	345,338	0	345,338
New York	135,870	0	2,500	134,586	0	137,086	0	137,086
Ohio	450,103	417,622	0	0	76,200	493,822	0	493,822
South Carolina	1,199,144	0	1,266,884	0	0	1,266,884	0	1,266,884
Tennessee	385,734	0	293,896	0	118,838	412,734	0	412,734
Texas	14,829	0	12,919	0	0	12,919	0	12,919
Utah	22,027	0	0	19,465	0	19,465	0	19,465
Washington	1,058,216	0	1,106,919	1,500	0	1,108,419	450,000	1,558,419
Program Direction	339,409	0	359,888	0	0	359,888	0	359,888
Science and Technology	228,131	0	196,548	0	0	196,548	0	196,548
Multi-Site	92,711	0	43,300	3,700	0	47,000	0	47,000
Reprogramming Reserves	33,200	0	0	0	0	0	0	0
U/Th Reimbursement	30,000	0	0	0	30,000	30,000	0	30,000
D&D Fund Deposit	420,000	0	420,000	0	0	420,000	0	420,000
Subtotal, EM	**$6,121,829**	**$1,082,297**	**$4,645,344**	**$286,201**	**$303,038**	**$6,316,880**	**$540,092**	**$6,856,972**
UE D&D Fund Offset	(420,000)	0	0	0	(420,000)	(420,000)	0	(420,000)
Contractor Travel Offset	0	0	(9,500)	(200)	0	(9,700)	0	(9,700)
Pension Offset	(8,700)	0	(50,000)	0	0	(50,000)	0	(50,000)
Prior Year Balances	(3,777)	0	(34,317)	0	0	(34,317)	(25,092)	(59,409)
Total, EM	**$5,689,352**	**$1,082,297**	**$4,551,527**	**$286,001**	**($116,962)**	**$5,802,863**	**$515,000**	**$6,317,863**
Privatization	188,282							
Grand Total, EM	**$5,877,634**	**$1,082,297**	**$4,551,527**	**$286,001**	**($116,962)**	**$5,802,863**	**$515,000**	**$6,317,863**

Note: FY 2000 funding is as appropriated and does not include any comparability adjustments.

FY 2001 EM Budget Request by Operations Office

Dollars in Thousands

Operations Office	FY 2000 Current Appropriation	FY 2001 Request						
		Defense Facilities Closure	Defense ER&WM	Non-Defense EM	D&D Fund	Subtotal Traditional BA	Privatization	Total
Albuquerque	$200,241	$0	$169,000	$48,163	$0	$217,163	$0	$217,163
Carlsbad	181,417	0	194,498	0	0	194,498	0	194,498
Chicago	53,702	0	914	37,913	0	38,827	0	38,827
Idaho	401,968	0	449,403	1,856	0	451,259	90,092	541,351
Nevada	87,471	0	90,212	0	0	90,212	0	90,212
Oakland	82,761	0	53,882	32,600	0	86,482	0	86,482
Oak Ridge	537,808	0	293,896	53,116	273,038	620,050	0	620,050
Ohio	510,975	417,622	0	107,353	0	524,975	0	524,975
Richland	719,759	0	724,780	1,500	0	726,280	0	726,280
Richland/ORP	338,457	0	382,139	0	0	382,139	450,000	832,139
Rocky Flats	664,675	664,675	0	0	0	664,675	0	664,675
Savannah River	1,199,144	0	1,266,884	0	0	1,266,884	0	1,266,884
Multi-Site	92,711	0	43,300	3,700	0	47,000	0	47,000
Reprogramming Reserves	33,200	0	0	0	0	0	0	0
Program Direction	339,409	0	359,888	0	0	359,888	0	359,888
U/TH Reimbursement	30,000	0	0	0	30,000	30,000	0	30,000
D&D Fund Deposit	420,000	0	420,000	0	0	420,000	0	420,000
Science and Technology	228,131	0	196,548	0	0	196,548	0	196,548
Subtotal, EM	**$6,121,829**	**$1,082,297**	**$4,645,344**	**$286,201**	**$303,038**	**$6,316,880**	**$540,092**	**$6,856,972**
UE D&D Fund Offset	(420,000)	0	0	0	(420,000)	(420,000)	0	(420,000)
Contractor Travel Offset	0	0	(9,500)	(200)	0	(9,700)	0	(9,700)
Pension Offset	(8,700)	0	(50,000)	0	0	(50,000)	0	(50,000)
Prior Year Balances	(3,777)	0	(34,317)	0	0	(34,317)	(25,092)	(59,409)
Total, EM	**$5,689,352**	**$1,082,297**	**$4,551,527**	**$286,001**	**($116,962)**	**$5,802,863**	**$515,000**	**$6,317,863**
Privatization	188,282							
Grand Total, EM	**$5,877,634**	**$1,082,297**	**$4,551,527**	**$286,001**	**($116,962)**	**$5,802,863**	**$515,000**	**$6,317,863**

Note: FY 2000 funding is as appropriated and does not include any comparability adjustments.

Savannah River Site, South Carolina Fiscal Year 2001 Request

(In thousands)

Defense, Site/Project Completion	$452,871
Defense, Post 2006 Completion	814,013
Subtotal	1,266,884
Pension Fund Offset	(50,000)
Total	1,216,884

The Savannah River Site continues its work to stabilize legacy nuclear materials and spent fuel from both the Savannah River Site and other sites across the complex, including plutonium residues and other plutonium-bearing materials from the Rocky Flats site in Colorado. This work is critical to resolve health and safety concerns, since these radioactive materials are now in liquid or unstable forms unsuitable for long-term storage, and to support closure goals at Rocky Flats. It is being carried out in response to Defense Nuclear Facilities Safety Board recommendations. In July 1997, the Secretary of Energy approved the operation of both the F-Canyon and H-Canyon for the stabilization of "at-risk" nuclear materials. In fiscal year 1999, these canyons stabilized plutonium residues and other nuclear materials. Activities were begun to characterize and repackage the Savannah River Site plutonium residues for stabilization.

In fiscal year 2000 and fiscal year 2001, we will continue to operate the two canyons as well as FB-Line, 235–F, and HB-Line to stabilize plutonium-bearing materials and spent nuclear fuel. The budget request also includes activities associated with future vitrification of americium/curium solutions and, as discussed previously, the Highly Enriched Uranium Blend Down Project.

We are not requesting funding for the Actinide Packaging and Storage Facility in fiscal year 2001. In light of the 1999 decision by the Department identifying Savannah River Site as the preferred location for new missions related to excess plutonium disposition, we have decided to temporarily suspend work on this facility until we can reevaluate the site's overall requirements and options to ensure, for example, that any facility developed is properly sized and integrated with other facilities, given these new missions. We are, however, continuing modification of facilities in the K-Area and are ready to receive surplus plutonium-bearing materials from Rocky Flats supporting the accelerated closure of that site.

Much of the EM work at the Savannah River Site that will be completed after fiscal year 2006 involves management of approximately 34 million gallons of high-level waste in tanks, including vitrifying waste for final disposal and removing waste from storage tanks so the tanks can be closed. In fiscal year 1999, the Savannah River Site workers closed another storage tank, removing waste and backfilling with grout, and produced 236 canisters of vitrified waste in the Defense Waste processing Facility (DWPF), 36 canisters above their fiscal year 1999 goal. As of February 2000, we had a total of 775 canisters of vitrified waste in storage. The DWPF goal for production of canisters in fiscal year 2001 is 200.

Due to the long-term nature of this project, we are able to develop and insert new and innovative technologies in the high level waste treatment train. We are currently moving forward with technologies that will make it easier to retrieve waste, to improve the way we decontaminate our canisters once they are filled, to reduce worker exposure through use of high efficiency filters that can be regenerated and reused, and to increase waste loading. These advances will allow DWPF to operate more efficiently and ensure that our goals for increasing canister production are realized.

In-Tank Precipitation operations were terminated in January 1998 because we were unable to successfully pre-treat the waste and limit the levels of benzene generation in the tanks to safe and manageable levels. Pre-treatment of the waste is necessary to separate the high-activity and low-activity wastes, in order to minimize the amount of waste that must be vitrified and disposed in a deep geologic repository. We undertook a systems engineering analysis, which was reviewed by a panel of independent experts, to evaluate all possible alternatives. The Department will continue research and development in fiscal year 2001 on technology alternatives to support a decision on which technology to pursue.

The fiscal year 2001 budget request continues support for receipt and storage at the Savannah River Site of spent nuclear fuel from domestic and foreign research reactors in support of national and international non-proliferation goals. In fiscal year 2001, we expect to receive 49 casks of spent nuclear fuel from foreign and domestic sources and safely store them at the Savannah River Site's basins. By the

end of fiscal year 2001, we expect to have received almost one-third of the spent fuel assemblies that we know other countries plan to return.

We will also continue to treat and reduce our legacy of mixed and low-level waste at the site through continued operation of the Consolidated Incinerator Facility (473 cubic meters will be treated in fiscal year 2001). The first shipment of Savannah River Site transuranic waste to the Waste Isolation Pilot Plant will occur in September 2000; four additional shipments are scheduled for fiscal year 2001.

We will also continue to aggressively pursue the use of new technology to characterize and cleanup contaminated release sites and ground waste plumes. We are using the Vadose Zone Monitoring System to determine how fast and in what concentration contaminants are traveling to the ground water. This approach provides sensitive early warning of aquifer contamination from the E-Area shallow disposal trenches. In fiscal year 2000 we will deploy a steam injection system, recently used at our Portsmouth site, to destroy chlorinated solvents beneath the 321–M Solvent Storage Area. This could replace the technology currently being used at the site and reduce the time of cleanup by more than 20 years. In fiscal year 2001, we will complete remediation of one release site and assessments for eight others. We will also operate eight groundwater remediation systems.

Finally, scientists and engineers at the Savannah River Site have been collaborating to develop a cost-effective path forward for some of the spent fuel through research and development of new technologies. This work is helping to address one of our most daunting problems—how to manage spent nuclear fuel and other nuclear materials without chemical separations. Our investment in the Alternative Technology Program has shown progress. A draft Environmental Impact Statement (EIS) identifying the "melt-and-dilute" process as the preferred alternative technology to prepare aluminum-based spent nuclear fuel for geologic disposal was issued in December 1998, and a final EIS is expected to be issued in March 2000. The fiscal year 2001 budget contains funds for the construction and startup of the L-Area Experimental Facility to demonstrate the viability of the melt and dilute process which will provide a firm basis for the design and construction of the full-scale facility. As other countries begin to address similar problems, these new U.S.-developed technologies will be available to help.

Hanford Site, Washington—Office of River Protection, Fiscal Year 2001 Request

(In thousands)

Defense, Post 2006 Completion	$382,139
Defense, Privatization	450,000
Total	832,139

Richland Operations Office—Fiscal Year 2001 Request

(In thousands)

Defense, Site/Project Completion	$349,467
Defense, Post 2006 Completion	375,313
Non-defense, Site/Project Completion	1,500
Total	726,280

The Hanford Site in Washington remains perhaps our greatest cleanup challenge. The 560-square mile site was carved out of a broad curve of the Columbia River during World War II. It is now the nation's largest former nuclear weapons production site, and the cleanup of the Hanford Site is the largest, most technically complex, environmental cleanup project yet undertaken. The site contains large amounts of spent nuclear fuel, unstable weapons grade plutonium, 177 underground tanks containing 54 million gallons of high-level radioactive waste tanks, and more than 100 square miles of contaminated ground water. It is important not to lose sight of the successes and accomplishments that have occurred despite the serious remaining challenges. We believe that our fiscal year 2001 budget request for Hanford addresses the requirements for continued cleanup progress.

Following Congressional direction in the Strom Thurmond National Defense Authorization Act for fiscal year 1999, the Department established the Office of River Protection (ORP) in December 1998. ORP is responsible for all aspects of the Tank Waste Remediation System—to store, treat, and immobilize the high-level radioactive Hanford Site tank waste in a sound, safe, and cost effective manner. Roles, responsibilities, and authorities for ORP are more fully specified in the Integrated Management Plan submitted to Congress in January 1999. The ORP reports directly to the Assistant Secretary for Environmental Management.

The Richland Operations Office manages all aspects of the Hanford Site except the Tank Waste Remediation Program.

Office of River Protection

ORP works with the Richland Operations Office to protect the health and safety of the public, workers, and the environment and to control hazardous materials to protect the Columbia River. Under the Defense Environmental Management, Post 2006 Completion account, ORP manages the Tank Waste Remediation System Project located on the central plateau (200 Area) of the Hanford Site. Treatment of the tank waste will be performed in two phases. Phase I will provide treatment for at least 10 percent of the waste by volume and 20 to 25 percent of the radioactivity in the tanks and is being carried out by a contractor on a fixed price for services basis (privatization). The storage, retrieval, and disposition of the waste will be managed by ORP using a conventional cost reimbursement contract. In August 1998, the Department of Energy signed a contract with BNFL, Inc. that allowed for an initial 24-month period to enable the contractor to develop more of the design for the treatment facility and to obtain financing and submit a fixed-price bid.

In fiscal year 2000, the Department will decide whether to authorize BNFL, Inc. to proceed to construction and operation, based on an evaluation of whether the proposal represents the best value for the taxpayer. To date, pilot testing has provided strong technical confirmation of pretreatment and vitrification capabilities. DOE and BNFL, Inc. have reached preliminary agreement on pricing methodology and major contractual terms. Financing of the project appears viable based on in depth discussions with financial institutions. BNFL, Inc. has mobilized a design and engineering team of over 600 people to support the privatization effort.

Management of 177 underground high-level waste tanks remains one of the biggest challenges at the Hanford site. We have made significant progress in reducing the urgent risks associated with these tanks. The high heat safety issue was resolved in tank C–106 by diluting the waste and transferring it to a larger double-shell tank with a higher heat removal capacity. The surface level rise issue was resolved in tank SY–101 by dissolving the crust on the surface of the waste through a series of waste transfers and back dilutions. Elimination of the crust will reduce the retention of flammable concentrations of gas in SY–101. We signed a Consent Decree with the State of Washington which established a schedule for interim stabilization of the single-shell tanks. To date, we have met all Consent Decree milestones, which includes initiating pumping of free liquids from six single-shell tanks. The contract for maintenance and operations of the tank farms, which will provide waste feed to the privatized treatment facility, has been placed directly under ORP.

For fiscal year 2001, ORP will continue improving tank safety by resolving high priority safety issues such as flammable gas generation and by transferring free liquids from single-shell tanks to double-shell tanks in accordance with the Consent Decree schedule. The remaining two tanks which are suspected of having leaked will be pumped during fiscal year 2001. In addition, design and construction will continue on tank farm retrieval systems and other infrastructure improvements necessary to support future waste feed delivery to the privatized treatment facility. One of these improvements is the use of a multi-function corrosion probe. This probe reduces the amount of sodium hydroxide that needs to be added to inhibit corrosion by allowing site workers to directly monitor the rate of tank corrosion. The potential savings from the use of this technology is in excess of $100 million.

The fiscal year 2001 request for $450 million in privatization funding will be used to maintain momentum on high-level waste treatment design, initiate actions to proceed with long lead project procurement and construction, manage the project, and meet contractual commitments in the unlikely event of a termination of the privatization contract. It will provide the contractor and the financial community with assurance that costs incurred to mobilize the team, secure financing, and demobilize the team in the event of a contract termination will be fully supported.

Richland Operations Office

The goals for the Hanford Site are the restoration of the Columbia River corridor (the majority of the Hanford land, including the river shoreline); transition of Hanford's 200 Area "central plateau" to long-term waste treatment and storage; and utilization of the government's Hanford assets, including land, cleanup technologies, and experience for the taxpayers.

The Department is continuing to remediate waste sites and dispose of the contaminated soil and debris in the Environmental Restoration Disposal Facility (ERDF). In fiscal year 1999, ERDF received over 320,000 cubic meters of contaminated soil and debris from cleanup sites along the Columbia River corridor. In fiscal

year 2000 ERDF will receive over 170,000 cubic meters to complete interim closure of Cells 1 and 2, and will complete construction of new cells 3 and 4.

We are also pursuing the use of innovative technology to solve problems in the subsurface. In 1999, we deployed the In-Situ Redox Manipulation (ISRM) technology to treat groundwater contaminated with chromium. ISRM creates a chemically altered treatment zone in the subsurface to reduce the mobility of chromium. This technology is expected to save more than $6 million compared to the pump-and-treat technology that the site had planned to use.

In fiscal year 1999, we restarted stabilization of plutonium oxides at the Plutonium Finishing Plant. In fiscal year 2000, stabilization activities will be expanded to begin stabilization of plutonium-bearing solutions and residues, as well as the continuation of plutonium oxide stabilization. Stabilization activities will eliminate the risk posed by the plutonium bearing materials and is a critical step in the deactivation of Plutonium Finishing Plant, which will significantly reduce mortgage costs at Hanford.

In addition, we continue to decommission the reactor facilities in the 100 Area through the Interim Safe Storage Project. In fiscal year 1999, the D and DR reactor stacks were demolished, and F and DR reactor decommissioning is proceeding ahead of schedule. In fiscal year 2000 and 2001, decommissioning activities will continue at the DR and F reactors as well as at the 233–S Plutonium Concentration Facility.

The Spent Nuclear Fuel Project will complete fuel retrieval, drying, transport, and storage system testing in fiscal year 2000. Additionally, non-mixed transuranic waste has been prepared for shipment to the Waste Isolation Pilot Plant, and the shipments will be initiated in fiscal year 2000.

In addition, our fiscal year 2001 budget request supports a number of key commitments, including:

—Begin K-West Basin spent fuel removal, drying, and transport to the Canister Storage Building for dry storage. This effort will begin to remediate one of the highest risks at the Hanford Site posed by the fuel stored in the aging K Basins near the Columbia River.

—Complete 13 waste site remediations in the Hanford 100 and 300 Areas, and send 240,025 cubic meters of contaminated soil and debris to ERDF.

—Complete 12 shipments of 55 cubic meters of transuranic waste to the Waste Isolation Pilot Plant for disposal.

—Initiate and complete thermal treatment of 717 cubic meters of mixed low-level waste at a contract facility.

—The Hanford Site Groundwater/Vadose Zone Integration Project will implement the high-priority Science and Technology activities identified in fiscal year 2000.

—Complete stabilization of 2,045 liters (cumulative total of 2,316 of 4,300 liters) of plutonium-bearing solutions and 500 containers (cumulative total of 1,050 of 5,845 containers) of plutonium metals and oxides at the Plutonium Finishing Plant.

—Begin operations of the bagless transfer system for packaging of plutonium-bearing materials, and complete brushing and repackaging of plutonium metal inventory at the Plutonium Finishing Plant.

Rocky Flats Environmental Technology Site, Colorado Fiscal Year 2001 Request

(In thousands)

Defense, Facilities Closure Projects	$664,675

Almost two-thirds (61 percent) of the Defense Closure Account request supports accelerated cleanup at the Rocky Flats Site, a former nuclear weapons production facility located 16 miles northwest of Denver, Colorado. The site was used to shape plutonium and uranium weapons components and for other defense-related production work. The cleanup poses significant challenges because of the large amounts of plutonium and other compounds remaining in tanks and production lines, the significant volumes of hazardous and radioactive wastes stored throughout the site, and widespread contamination of soils, sediments, and groundwater.

The Rocky Flats Site is one of the highlighted projects, and certainly the largest site, for our goal of accelerating site cleanup and closure by 2006. There are many challenges facing this project, but we are confident that by remaining focused on our goal we can produce substantial savings and provide dramatic risk reduction. We recently awarded Kaiser-Hill, L.L.C. a closure contract valued at approximately $4 billion (excluding incentive payments) to complete the closure of the site. The target closure date is December 15, 2006, although the contract includes incentives for accelerated completion and reduction in fee for any delay beyond the targeted end date. This contract became effective February 1, 2000, and Kaiser-Hill is in the

process of developing a revised 2006 baseline which will reflect the provisions of the new cost-plus-incentive-fee contract. These provisions include cost and schedule incentives focused on ensuring the cleanup is conducted safely in full compliance with all safety, health, environmental, and safeguard and security requirements. The contract also stipulates an assumption that level funding at $657 million will be provided through December 2006. Under the contract terms, Kaiser-Hill is assuming more financial responsibility than any site management contractor in the history of DOE. Significant progress has been made over the past year to transition from the previous 2010 Closure Baseline to 2006 Closure Project Baseline submitted last May. However, this contract formalizes the Department's commitment to achieve the closure of Rocky Flats by the end of 2006, and better positions the Department and Kaiser-Hill to meet—or even exceed—this. We have clearly come a long way since the earlier estimates that it would take $30 billion and 30 years to complete cleanup at Rocky Flats.

The key ingredient for closing Rocky Flats is being able to move nuclear materials and waste off of the site. Making progress in this critical area requires not only preparing the materials and waste for shipment, but also making sure that the receiving sites are ready. We have made some significant progress, such as exceeding our planned shipments of low-level and mixed-low level waste for offsite disposal in fiscal year 1999. Also, we initiated shipments of transuranic waste to WIPP, disposing of 65 cubic meters in fiscal year 1999, and we are expecting to receive approval from the New Mexico Environment Department to resume transuranic waste shipments under the RCRA Part B Permit very soon. Rocky Flats will be the first site to be certified by New Mexico as meeting the requirements of the permit. In total, there are nearly 15,000 cubic meters of transuranic waste and approximately 100,000 kilograms of plutonium residues that need to be packaged and sent to WIPP. There are also approximately 2,300 containers of nuclear materials which must be shipped off site by the end of 2002 to allow for the closure of the Protected Area, a critical step in the 2006 Closure Project Baseline.

The Department has clearly made enormous progress both in reducing risks at the site, and in greatly improving our management plans for cleanup and closure. Approximately 35 metric tons of plutonium residues have been stabilized and/or repackaged to date, and we expect to stabilize or repackage 41 metric tons in fiscal year 2000. In fiscal year 1999 we completed the shipments of pits to Pantex and weapons-grade uranium to Y–12. We also shipped nearly half of the plutonium scrub alloy to Savannah River Site, and this campaign will soon be completed. Currently, we are continuing our preparations to initiate the shipment of plutonium metals and oxides to Savannah River for storage in the recently opened K-Area.

We are making progress on demolishing buildings at Rocky Flats, not only reducing risks but also reducing mortgage costs required to maintain those excess buildings. The demolition of the Building 779 cluster—which once held 133 contaminated glove boxes—was completed in early January. Our efforts to reduce risks and mortgages includes the use of innovative technology. For example, we are using new ways to stabilize and remove contamination using strippable coatings. These coatings are sprayed onto the surfaces of contaminated walls to reduce airborne contamination and worker exposure. In some cases airborne contamination is reduced by a factor of 900. In fiscal year 2000 we are moving forward with an automated robotic size reduction and packaging process. This technology which will be deployed in Building 776/777 will improve worker safety and increase efficiency by allowing workers to remotely dismantle plutonium contaminated glove boxes.

The fiscal year 2000 appropriation and fiscal year 2001 budget request for Rocky Flats ($664.7 million each year) fund the activities we have already identified as necessary for accelerated closure. We are committed to producing the following results:

—Make significant progress in the decontamination and decommissioning of Building 771 by tapping, draining and removing remaining liquid process systems and dismantling, size reducing and packaging glove boxes, tanks and other equipment for shipment.
—Ship nearly 8,000 cubic meters of radioactive waste offsite for disposal.
—Process more than 16 metric tons of plutonium residues in preparation for safe disposition.
—Package 960 containers of plutonium.
—Ship over 1,000 containers of plutonium metals and oxides to the K-Area at the Savannah River Site.

We are fully committed to maintaining our progress towards the accelerated cleanup at Rocky Flats, thereby reducing risk and long-term costs. We also understand the vital role of accelerated site closure to the community where commercial

and residential development along the Denver-Boulder corridor has reached nearly to the fence line of Rocky Flats.

Idaho National Engineering and Environmental Laboratory, Idaho Fiscal Year 2001 Request

(In thousands)

Defense, Site/Project Completion	$100,692
Defense, Post 2006 Completion	348,711
Non-defense, Site/Project Completion	1,856
Defense, Privatization	90,092
Subtotal	541,351
Use of Prior Year Balances (Defense)	(34,317)
Use of Prior Year Balances (Privatization)	(25,092)
Total	481,942

The fiscal year 2001 budget request for the Idaho National Engineering and Environmental Laboratory (INEEL) supports the receipt and safe interim storage of spent nuclear fuel, including Naval and domestic and foreign research fuel; the storage and treatment of high level waste in 11 underground tanks; the cleanup of six "release sites," or contaminated areas, and two surplus facilities; and the management of legacy waste, including transuranic waste to be shipped to the Waste Isolation Pilot Plant (WIPP). Many of the critical activities at the site are in accordance with the Settlement Agreement signed with the State of Idaho in 1995.

One of the most complex challenges at INEEL is the remediation of buried wastes, contaminated release sites, contaminated soils, and ground water. Progress has been made under the Operable Unit 7–10 Staged Interim Action Project for the cleanup of Pit 9 at the Radioactive Waste Management Complex (RWMC) with the insertion of 20 probes into the pit and the planned sample coring of waste and soils later this year. A strategic review of the Pit 9/RWMC remediation effort is currently underway to determine an appropriate path forward. Progress at Test Area North is being made with the application of bioremediation to the cleanup of the ground water plume at the injection well. At the Test Reactor Area, remediation of identified release sites will be completed in fiscal year 2001, two years ahead of schedule. This includes four additional release sites added since the signing of the Record of Decision. At the Idaho Nuclear Technology and Engineering Center (INTEC), with the signing of the Record of Decision in fiscal year 1999, we are undertaking the complex process of remediating soil and ground water release sites while continuing to operate INTEC for spent fuel storage and waste management missions. In addition, we have plans to design and build the Idaho CERCLA Disposal Facility at this site, which will be used for the disposal of contaminated soils generated in the cleanup of INTEC and other contaminated sites at the INEEL.

INEEL plays a key role in providing safe storage and management of spent nuclear fuel in support of the Administration's non-proliferation goals. INEEL received shipments of foreign research reactor fuel in fiscal year 1998 and fiscal year 1999 and will continue to receive shipments in fiscal year 2000 and 2001. In addition, INEEL is actively improving storage conditions at the site, transferring fuel from wet to dry storage, or from aging facilities to modern, state-of-the-art facilities. For example, we expect to complete the transfer of all spent nuclear fuel in wet storage in the CPP–603 South Basin to improved storage facilities well in advance of the Settlement Agreement milestone date of December 31, 2000. We will also complete moving Three Mile Island spent nuclear fuel and core debris from wet storage at Test Area North to dry storage at INTEC by the June 1, 2001, Idaho Settlement Agreement milestone date. The Department also plans to award a privatization contract in fiscal year 2000 for the packaging and safe interim storage of other spent nuclear fuel at the INEEL. The fiscal year 2001 budget request includes the use of $25 million in prior year balances for this project in the privatization account.

A substantial portion of the INEEL budget request supports the management of high level waste. INEEL has about 1.3 million gallons of liquid sodium-bearing waste stored in 11 underground tanks, and about 150,000 cubic feet of calcined mixed high level waste in separate robust temporary storage. Through June 2000, we will calcine a small percentage of the liquid. Calcined waste is in a more stable (solid granular) form for storage and is reduced in volume. After June 1, 2000, the calcining facility will be placed in standby mode as required by the State of Idaho, until an environmentally safe, technically viable, and economic path forward can be identified for the final treatment of the calcine and liquid. A draft environmental

impact statement (EIS) for the high-level waste alternatives has been issued, and a final EIS is planned for the end of fiscal year 2000. An associated Record of Decision is planned in early fiscal year 2001. Support activities include sampling and characterizing the liquid tank contents in fiscal year 1999 and fiscal year 2000, the sampling and characterization of air emissions from the calcining facility in fiscal year 1999 and fiscal year 2000, and submission of the first tank closure plan to the State in early fiscal year 2001 to permanently close tanks as they are emptied and removed from service.

In fiscal year 1999, we deployed the Light Duty Utility Arm (LDUA) in Tank WM–188. The LDUA is the core of a suite of technologies that can inspect, sample, and retrieve waste remotely through openings in the tank dome. In this case, we visually inspected the tank interior and obtained samples of the tank waste. We are moving forward in 2000 to inspect and obtain samples from two additional tanks. This information is critical to the preparation of the first tank closure plan due to the State in early fiscal year 2001.

INEEL has approximately 65,000 cubic meters of stored transuranic waste and mixed low-level waste contaminated with transuranic radionuclides that must be removed from the State of Idaho under the terms of the 1995 Settlement Agreement. We continue to make progress in characterizing and processing the transuranic waste for shipment to the WIPP for disposal. In fiscal year 1999, the INEEL completed its first shipment of non-mixed transuranic waste to the WIPP, meeting a Settlement Agreement milestone, and additional shipments for a total of 26 cubic meters. In fiscal year 2000 and 2001, the amounts of transuranic waste to be shipped to the WIPP will increase to 96 and 1,160 cubic meters, respectively. Progress also continues on the Advanced Mixed Waste Treatment Project, a privatization project that will greatly increase the INEEL's processing capability for this waste. The National Environmental Policy Act evaluation for the project was completed in fiscal year 1999, and all environmental regulatory permits for the project are expected to be received in fiscal year 2000, enabling facility construction to begin in fiscal year 2000. Construction activities are targeted to continue in fiscal year 2001 and fiscal year 2002, and the facility is expected to begin operations in fiscal year 2003. We are requesting $65 million in privatization budget authority for this project.

INEEL now operates under the sponsorship of EM, and has been designated a lead laboratory assisting DOE with its Environmental Quality mission. The INEEL will continue to perform world-class scientific research and development, technology demonstration and deployment, and systems analysis and integration in support of EM across the DOE complex. A major initiative in subsurface science will improve the understanding of contaminant transport and fate in the subsurface environment. This will result in better decision-making and allow DOE to consider alternatives to baseline plans for cleanup, resulting in more efficient use of available resources. This initiative and other related activities will ensure a sound scientific basis for decision-making and full integration of science and technology into INEEL and EM operations.

As part of EM's Lead Program Secretarial Office designation with respect to INEEL, EM assumes the function of landlord. This responsibility entails all construction, maintenance, and site-wide management of shared essential systems such as utilities, roads and infrastructure. This important function enables the safe and efficient accomplishment of the long-term and varied programs assigned to the INEEL.

Oak Ridge Reservation, Tennessee Fiscal Year 2001 Request

(In thousands)

Defense, Post 2006 Completion	$293,896
UE D&D Fund	118,838
Total	412,734

The Oak Ridge Reservation is comprised of three facilities—the Y–12 Plant, the East Tennessee Technology Park (ETTP) (formerly the K–25 uranium enrichment facility), and the Oak Ridge National Laboratory (ORNL). Funding for environmental management activities at Oak Ridge is included in the Defense, Post-2006 Completion Account, with funding for the cleanup of ETTP coming from both this account and the Uranium Enrichment Decontamination and Decommissioning Fund.

The Department continues its efforts to reindustrialize facilities in Oak Ridge, particularly at ETTP. The primary goal is to clean up ETTP as quickly and as safely

as possible so that the site can be reused as an industrial park. As of September 1999, about 850,000 square feet of space has been leased to 30 private companies in a total of 51 separate leases. In some cases, the Department has conducted cleanup of the building and, in other cases, the private company is undertaking the cleanup. Overall, we estimate that this strategy will save $165 million in life-cycle costs. We are making good progress on the largest decommissioning project to date at ETTP. Cleanup of K–33, the first DOE uranium enrichment facility to be decommissioned, is already 27 percent complete as of February 2000, and most of the project's infrastructure is in place. The K–33 building is the largest building the Department has decommissioned to date. We will begin operations of the supercompactor in October 2000, which will reduce the volume of waste generated by cleanup of the buildings at ETTP and thereby reduce disposal costs.

The Department has developed a DOE-wide policy to ensure that the health and safety of private industry workers at ETTP and other leased facilities are protected. The Department plans to evaluate the application of the reindustrialization approach at other sites to accelerate cleanup, reduce costs, and create private sector jobs.

The fiscal year 2001 request continues support for the decommissioning of the Molten Salt Reactor Experiment at ORNL. This experimental nuclear reactor was designed to use a fuel of highly-reactive uranium-233 blended with a molten salt coolant. After 4½ years of operation, the reactor was shut down in December 1969. The EM program has made substantial progress, with input from the National Academy of Sciences, in stabilizing and deactivating this reactor. For example, the EM program has installed and continues operation of a system to remove reactive gases from the reactor tanks and keep the reactor systems below atmospheric pressure until the fuel salt can be removed. In fiscal year 2001, we plan to complete the equipment installation and readiness assessment for fuel salt removal and convert uranium captured in the sodium fluoride traps to a stable oxide for storage.

We have completed cleanup of the fourth of eight highly radioactive waste storage tanks, called the "Gunite Tanks," at ORNL and have started work on the next tank, expected to be completed six months ahead of schedule. The tanks were built in 1943 and were used for waste from chemical separations (reprocessing) operations until the late 1970's. The tanks vary in size, with some having a capacity of 170,000 gallons (approximately the size of a 4-bedroom house). The estimated cost of the project is now $80 million, less than half the original estimate of $200 million. A key factor in the accelerated schedule has been the development of a variety of remote remediation technologies, such as the "Houdini" vehicle and a robotic arm that provide access to the tank interior, which have allowed work to proceed on two tanks simultaneously, rather than sequentially as initially planned. The lessons learned in deploying new technologies in the Gunite tanks are being shared with the Office of River Protection to accelerate cleanup of the tanks at Hanford.

The Toxic Substances Control Act (TSCA) incinerator at Oak Ridge, permitted by the State to treat mixed radioactive and hazardous wastes regulated by the Resource Conservation and Recovery Act and by EPA to treat PCB-contaminated wastes regulated under TSCA, offers unique capability within the DOE system. In addition to treating wastes generated by Oak Ridge facilities, the TSCA incinerator has also been used to treat wastes from other sites in the DOE complex, providing a cost-effective and integrated approach to managing these wastes. However, the Governor of Tennessee rejected the Department's proposed annual burn plans for fiscal year 1999 and fiscal year 2000, citing equity concerns. Responding to these concerns, the Department limited the use of the incinerator to wastes generated at DOE sites managed by the Oak Ridge Operations Office. However, the publication of the Record of Decision for disposal of DOE low-level and mixed low-level waste in February 2000 based on the Waste Management Programmatic EIS should address the Governor's concern regarding the availability of disposal for waste from Oak Ridge.

Construction of the Environmental Management Waste Management Facility is scheduled to be completed in fiscal year 2001, allowing operations to begin soon after. This facility has been designed for disposal of CERCLA wastes generated during the cleanup of the Oak Ridge Reservation. The facility is the critical component of the Department's cleanup plan for the Oak Ridge Reservation.

Fernald Environmental Management Project, Ohio Fiscal Year 2001 Request

(In thousands)

Defense, Facilities Closure Projects	$290,793

The cleanup activities at Fernald Environmental Management Project account for more than $290 million, or 27 percent of the funding in the Defense Facilities Closure Projects Account. The Fernald site, encompassing approximately 1,050 acres near Cincinnati, produced uranium for nuclear weapons from 1951 to the end of Cold War in 1989. Nearly forty years of uranium production left the Fernald Site with soil and groundwater contamination, a large backlog of wastes, including some unstable liquids, as well as stored nuclear materials such as depleted and enriched uranium. Several years of cleanup progress have included stabilization of liquid uranium solutions, off-site shipment of low-level waste, and deactivation, decontamination and demolition of several large industrial buildings at Fernald. The current baseline calls for cleanup to be completed by fiscal year 2008, but the Department is seeking to complete work by fiscal year 2006. Groundwater remediation and long-term institutional controls will be necessary after active cleanup is completed.

One approach we are taking to achieve the accelerated closure goal is the use of new technology. For example, we are saving time and money by using a suite of technologies that identify, in real time, radioactive contaminants in the soil. This rapid characterization reduces the amount of soil we have to excavate and improves worker productivity. We have already deployed this technology in three separate areas at Fernald. We estimate these technologies will reduce remediation cost by over $30 million.

In fiscal year 2000, we will continue to dispose of waste into the On-site Disposal Facility, including debris from the completion of decontamination and decommissioning of all nuclear facilities and on-site contaminated soil. In fiscal year 2001, we will complete the placement of a permanent cap on Cell 1. The availability of this facility is enabling us to accelerate disposal of contaminated soil and debris resulting from cleanup and building demolition at a significant cost savings.

For the Silos project, in fiscal year 1999 we awarded subcontracts for Silos 1 and 2, and Silo 3. In fiscal year 2000 we will initiate pre-operational activities for Silo 3 remediation and in fiscal year 2001 plan to initiate remediation of Silo 3, submit draft Record of Decision Amendment to the Environmental Protection Agency, and continue construction of Silos 1 and 2 Accelerated Waste Retrieval.

We will continue to excavate and load Waste Pit material into railcars and transport these materials by rail for disposal. In fiscal year 1999, we disposed of 32,241 cubic meters of treated waste and are planning to treat and dispose of 92,570 cubic meters in fiscal year 2000 and 91,570 cubic meters in fiscal year 2001.

Finally, Fernald personnel have continued the process of razing deactivated and decontaminated industrial buildings. They completed demolition of 6 of the 11 major facility complexes (Maintenance Building/Tank Farm Complex), and plan to complete Plant 5 Complex in fiscal year 2000, and, in fiscal year 2000, continue decontamination and decommissioning of Plant 6 Complex, and initiate the East Warehouse Complex resulting in outyear reductions in mortgage and landlord costs.

Waste Isolation Pilot Plant, New Mexico Fiscal Year 2001 Request

(In thousands)

Defense, Post 2006 Completion	$194,498

Opening and operating WIPP is a key element of the Department's strategy to provide for the permanent disposal of the Department's inventory of radioactive transuranic waste. Currently a large amount of transuranic waste, more than 100,000 cubic meters, is being stored at more than two dozen sites around the United States. In many cases, this waste has been stored for decades. By shipping this waste to WIPP for disposal, the Department will be able to reduce the number of sites where this type of waste is stored, reducing the costs of storing this waste and the long-term risks to the public and the environment.

On March 26, 1999, WIPP began operations, receiving its first shipment of defense-generated, non-mixed, transuranic waste from Los Alamos National Laboratory. The first shipment from INEEL was made in April 1999, thereby meeting an important milestone in the Idaho Settlement Agreement between the Department and the State of Idaho. The first shipment from the Rocky Flats site to WIPP was made in June 1999 and represented the first step in meeting the Department's commitment to complete cleanup and site closure by December 2006.

On October 27, 1999, the State of New Mexico issued the final Resource Conservation and Recovery Act (RCRA) permit, with an effective date of November 26, 1999. The permit contains numerous new provisions which must be incorporated in the generator and storage sites procedures, and staff must be trained to the new requirements. Quality assurance audits must be performed by DOE and audit reports must be submitted to the New Mexico Environment Department for approval before

shipments under the permit can begin. The Department is striving to meet all permit requirements so that waste shipments can quickly resume, but has legally challenged certain provisions of the permit, including the financial assurance and certain technical requirements.

Rocky Flats is the first site scheduled to resume shipments under the permit. DOE conducted a quality assurance audit at Rocky Flats in December, and submitted the audit report to New Mexico in late January. New Mexico approval of the audit report is expected by late February, and shipments are expected to resume within the next several weeks.

The fiscal year 2001 budget request will allow WIPP to increase the receipt of contact-handled transuranic waste shipments from about 120 shipments in fiscal year 2000 to about 485 shipments in fiscal year 2001. The five sites scheduled to ship transuranic waste to WIPP in both fiscal year 2000 and fiscal year 2001 are Rocky Flats, INEEL, Hanford, Los Alamos, and Savannah River Site.

The Carlsbad Area Office and the Office of Science and Technology have teamed up to develop and introduce technologies that reduce risk, ensure proper certification of shipments, and increase the movement of waste from storage to disposal. One of these technologies, HANDS–55, is a robotic system that handles and segregates waste in 55 gallon drums. This technology not only improves worker health and safety but will increase the throughput of waste available for final disposal.

The funding request for fiscal year 2001 includes $20.8 million that will be paid into a trust fund established by the Department to meet the financial assurance requirements of the RCRA permit. In previous years, these funds were used to provide economic assistance to the State of New Mexico, as required by the WIPP Land Withdrawal Act of 1996, but the Energy and Water Development Appropriations Act for fiscal year 2000 allowed the Department to use funds otherwise available to New Mexico for economic assistance to meet financial assurance requirements.

The WIPP program also funds a variety of institutional programs that provide for operational oversight and other assistance for affected governments and stakeholder groups. Funds are included in the request for cooperative agreements with the Indian Tribes, Environmental Evaluation Group, Western Governors Association, and other State regional groups.

The Department is relying on a privatization approach to procure shipping casks for transuranic waste transportation. This project received $19,605,000 in budget authority in the Defense Privatization account in fiscal year 1999 for the purchase of waste shipping containers to ship remote-handled transuranic waste from the generator sites to WIPP. The fiscal year 2001 budget request proposes to reduce this privatization funding to $15,513,000. This contract is expected to be awarded in June 2000.

We have withdrawn the privatization project for transportation services for contact-handled transuranic waste and are funding this work through traditional appropriations. In 1999, Congress approved a reprogramming that allowed the EM program to acquire 12 contact-handled transuranic waste shipping containers to meet an urgent need for additional containers. EM reevaluated the acquisition strategy for the remaining transportation services and concluded that the project no longer fit the profile for privatization. The remainder of the capital equipment will now be funded from within the Post-2006 Account. The $21 million for this privatization project will be used to offset the request for the Spent nuclear Fuel Dry Storage Project at INEEL.

West Valley Demonstration Plant, New York Fiscal Year 2001 Request

(In thousands)

Non-Defense, Post 2006 Completion	$107,353

Cleanup of the West Valley Demonstration Project, located in upstate New York near Buffalo, is being conducted at the site of the only commercial nuclear fuel reprocessing facility to operate in the United States. The private company processed commercial spent nuclear fuel to extract plutonium and uranium from 1966 to 1972, generating 2,200 cubic meters of liquid high-level waste.

The principal operation at West Valley is the solidification of the liquid high-level waste into borosilicate glass using a process called vitrification. The primary vitrification campaign began in June 1996 and was completed ahead of schedule in June 1998. Vitrification of the high-level waste tank heels is currently underway and will be completed in fiscal year 2001.

Following the vitrification of the high-level waste, the equipment and facilities used in carrying out the project will be decontaminated and decommissioned. The New York State Energy Research and Development Authority and DOE are working

together and with stakeholders to formulate a preferred alternative for remediation and closure or long-term management of the site. The estimated completion date for West Valley may extend to 2015 or beyond, depending on the decisions made through this process.

Another critical element of the EM program at West Valley is the safe management of 125 spent nuclear fuel elements stored at the site. EM will continue surveillance and maintenance of the spent fuel facility to ensure safe storage until the spent fuel can be shipped to the Idaho National Engineering and Environmental Laboratory (INEEL) in fiscal year 2001.

In fiscal year 2000, the Department will continue vitrification of the high-level waste tank heels (producing approximately five canisters of solidified high-level waste) and preparations for shipment of spent nuclear fuel. We also plan to complete an Environmental Impact Statement Preferred Alternative for cleanup and management of the site and to resolve responsibility issues with the State of New York.

In fiscal year 2001, we will complete vitrification activities (producing approximately five canisters of solidified high-level waste), complete shipment of the spent nuclear fuel elements to INEEL, complete the final design for the Remote Handled Waste Facility, and continue off-site shipments of low-level waste for disposal.

Los Alamos National Laboratory, New Mexico Fiscal Year 2001 Request

(In thousands)

Defense, Post 2006 Completion	$92,129
Non-Defense, Post 2006 Completion	3,981
Total	96,110

Our goal at Los Alamos National Laboratory is to complete cleanup work by 2013 and disposition of legacy waste by 2015. Through fiscal year 1999, the Department completed remediation of 1,401 of 2,000 "release sites," or specific areas where releases of contaminants had occurred, and had decommissioned 41 out of 145 surplus facilities. We plan to complete cleanup of two release sites and two facilities in fiscal year 2000 and five release sites and one facility in fiscal year 2001.

A little more than half of the fiscal year 2001 request for Los Alamos funding is devoted to environmental restoration work, such as drilling new regional ground water wells to characterize the hydrogeology. It also includes cleanup work in anticipation of transferring land to the community. As required by law, DOE has identified ten parcels totaling about 4000 acres for potential transfer to the County of Los Alamos and the San Ildefenso Pueblos. We have published a final Environmental Impact Statement on the land transfers and a supporting Environmental Restoration Report, and are now preparing an implementation plan for cleanup of all land parcels that will be submitted to Congress in spring of 2000. DOE intends to follow a phased approach in accomplishing the land transfers, starting with the transfer of the relatively simple, uncontaminated parcels in 2000 and continuing with the transfer of the more complex sites in the later years. The Department has budgeted approximately $4 million in fiscal year 2000 and fiscal year 2001 to address cleanup requirements for the ten parcels under consideration.

The Los Alamos legacy waste project provides for the treatment, storage, and disposal of all legacy waste that is presently in storage at the Los Alamos National Laboratory. The legacy waste consists of mixed low-level waste, transuranic waste, and mixed transuranic waste. The waste was generated at 33 Technical Areas and is treated, stored, and disposed of in compliance with applicable Federal and State of New Mexico requirements.

Los Alamos has accelerated the treatment and disposal of legacy mixed low-level waste and retrieval of legacy transuranic waste (both transuranic and mixed transuranic) stored on asphalt pads under earthen cover, and now expects to complete these activities a year earlier than previously planned. Treatment and disposal of legacy mixed low-level waste with an identified path for disposal is now planned to be completed in fiscal year 2003. Retrieval of legacy transuranic and mixed transuranic waste stored on Asphalt Pads 1 and 4 has been completed. Retrieval of waste drums on Pad 2 will begin during fiscal year 2000 with completion now scheduled for fiscal year 2002.

Los Alamos National Laboratory was the first DOE site to receive authority to certify transuranic waste for shipment to the WIPP and the first DOE site to ship transuranic waste to the WIPP. We have completed 17 shipments of legacy transuranic waste to the WIPP during fiscal year 1999. Los Alamos plans to make 28

shipments to WIPP in fiscal year 2001, which includes transuranic waste from the EM and Defense Programs.

The Department designated Los Alamos as the lead laboratory for research and development efforts to support the Department's nuclear materials management. In this capacity, Los Alamos provides solutions to complex-wide technical and operational issues associated with stabilization and storage of plutonium and other nuclear materials.

Miamisburg Environmental Management Project (Mound) Fiscal Year 2001 Request

(In thousands)

Defense, Facilities Closure Projects	$94,353

The Miamisburg Environmental Management Project, a 306-acre facility near Dayton, Ohio used for tritium and plutonium operations, consists of 152 buildings and approximately 230 potentially contaminated soil areas. We have a goal of completing cleanup of the site prior to 2006 and we are making good progress. By the end of fiscal year 2000, nearly one-half of the 107 buildings scheduled for removal will have been demolished or auctioned off, a quarter of the 42 buildings scheduled to be transferred to the City of Miamisburg will have been decommissioned and decontaminated, and two-thirds of the potential soil release sites will have been remediated.

In fiscal year 1999, Mound completed the disposition of its legacy low-level, mixed low-level and hazardous chemical waste streams. In fiscal year 2000 the site will complete the disposition of its remaining legacy nuclear materials, generally sealed sources that were used to calibrate and test equipment. The site will remove or cleanup three additional buildings in each of fiscal years 2000 and 2001 and will remediate six soil areas in fiscal year 2000 and nine more in fiscal year 2001. More importantly, the site will continue to accelerate remediation of the tritium operations facilities. This project comprises three highly contaminated, complex buildings and constitutes the site's "critical path" for cleanup and closure.

We have negotiated an agreement to transfer the ownership of the site to the City of Miamisburg as remediation of discrete parcels are completed. In 1999, we transferred two buildings and 27 acres and this year we expect to deed over two more buildings and another 100 acres. Currently, 30 private businesses, employing 350 workers, are leasing facilities at Mound. The Department's Office of Nuclear Energy's radioisotope heat source program will remain at Mound after the cleanup and transfer of the rest of the site is concluded. The program will retain three of the site's current buildings.

Paducah Gaseous Diffusion Plant, Kentucky Fiscal Year 2001 Request

(In thousands)

UE D&D Fund	$78,000

This uranium enrichment facility occupies a 3,500 acre site in Paducah—including 750 acres within the fenced security area and 2,000 acres leased to the Kentucky Department of Fish and Wildlife. Initially constructed to support the Federal government's uranium enrichment program, the facility now produces enriched uranium for commercial nuclear reactors under the auspices of the U.S. Enrichment Corporation (USEC). USEC is responsible for all primary process facilities and auxiliary facilities associated with the enrichment services and for waste generated by current operations. The Department has responsibility for facilities, materials, and equipment not needed by USEC for their operations. EM is responsible for the cleanup of existing environmental contamination at the site and management of legacy waste.

The cleanup problems and contaminants at Paducah include both on-site and offsite contamination from radioactive and hazardous materials. The environmental problem receiving our earliest and most focused attention has been groundwater contamination, primarily trichloroethylene (TCE) and technetium-99, which has contaminated private residential wells. Two plumes traveling in a northeasterly and northwesterly direction extend more than two miles offsite in the direction of the Ohio River. A third plume, traveling southwest, extends 1,500 feet outside of the plant boundary. Dense non-aqueous phase liquids (DNAPLs) have also been found in the vadose zone on-site.

There are also numerous contaminated areas around the site where chemical and radioactive wastes or trace amounts of plutonium and other transuranics were disposed or inadvertently spilled or otherwise released to the environment. We also

must safely manage and disposition about 65,000 tons of scrap metal, and 6,000 cubic meters of low-level waste in drums, much of which is currently stored outdoors and exposed to the elements.

The Department continues to pay municipal water bills for residents whose drinking water wells were affected by the groundwater contamination, and continues to monitor residential wells. We will continue to operate "pump and treat" systems installed at the northeast and northwest plumes during the early 1990's; approximately 12,000 pounds of TCE have been extracted from groundwater since these systems began operation. In fiscal year 2000, an innovative technology, an in-situ permeable reactive barrier, will be installed in the Southwest Plume to treat the DNAPLs. In fiscal year 2001, we will issue a Record of Decision for final remedy for sources contributing to the northeast and northwest plumes.

The fiscal year 2001 request for $78 million for Paducah cleanup activities is nearly $24 million more than in fiscal year 2000 and almost a two-fold increase from the appropriation in fiscal year 1999 that will allow us to accelerate cleanup and respond to concerns raised by investigations by DOE's Office of Environment, Safety and Health (EH) about the pace of cleanup. In fiscal year 2000, DOE received an additional $6 million for Paducah through a budget amendment that has allowed us to accelerate the removal of "Drum Mountain," a large scrap pile containing thousands of empty, radioactively-contaminated drums, which is a suspected source of contamination of the Big and Little Bayou Creeks from surface run-off. These drums will be removed in fiscal year 2000, and off-site disposal completed in fiscal year 2001. Disposition of the remaining scrap metal will continue on an accelerated pace for completion by fiscal year 2003, a critical path activity to completing the burial grounds investigation and final site cleanup. We will complete an engineering and cost analysis for removing the scrap metal in fiscal year 2000 and initiate disposition in fiscal year 2001.

The request also allows the Department to accelerate characterization and disposition of thousands of drums of low level waste which have been stored out of doors for many years and to begin removing contaminated equipment and materials from two large shut down facilities. The Department, U.S. EPA and the Commonwealth of Kentucky have identified these and other activities that could be accelerated to achieve cleanup completion in 2010 rather than in 2012 as planned under the current baseline. The Department continues to work with State and Federal regulators to ensure agreement on site priorities and to identify opportunities to accelerate cleanup.

The Department has submitted to Congress a supplemental budget request for fiscal year 2000 funding that would provide an additional $8 million for cleanup activities at the Paducah site. The funds would be used to remove concrete rubble piles from the Wildlife Management Area, one of which was identified as having low levels of radiological contamination. The funds would also allow us to begin acceleration of other priority activities, such as stabilization of the shut-down facilities, in fiscal year 2000.

Portsmouth Gaseous Diffusion Plant, Ohio Fiscal Year 2001 Request

(In thousands)

UE D&D Fund	$76,200

Initially constructed to support the Federal government's uranium enrichment program, the Portsmouth Gaseous Diffusion Plant now produces enriched uranium for commercial nuclear reactors under the auspices of the U.S. Enrichment Corporation (USEC). EM is responsible for the cleanup of existing environmental contamination at the site and management of legacy waste. Primary environmental problems include contaminated areas around the site where chemical and radioactive wastes were disposed or inadvertently spilled or otherwise released to the environment, remediation of several old landfills, disposition of legacy waste, and remediation and containment of groundwater contaminated with both radioactive contaminants, specifically uranium and technetium, and chemical contaminants such as trichloroethylene (TCE) and heavy metals. There is no off-site contamination, and groundwater contamination is contained within the shallow aquifer bedrock at 30 feet below land surface. With the requested increased funding in fiscal year 2000 and fiscal year 2001, EM plans to complete active remediation by fiscal year 2002 and all legacy waste disposition by fiscal year 2006.

In fiscal year 1999, the Department completed all corrective actions required for release sites, or areas where releases of contaminants had occurred, located on the west side of the plant. A phytoremediation project was completed which involved planting 765 hybrid poplar trees over a small groundwater plume area contami-

nated with industrial solvents. Phytoremediation uses the natural growth process of plants to treat contaminated soils, sediments, and groundwater. In addition, a 1-year steam stripping pilot study was completed on the groundwater plume located in the vicinity of retention ponds for the old chemical cleaning facility (X–701B), which resulted in the removal of 824 pounds of solvent contaminants.

In fiscal year 2000, the Department will complete current investigations and interim corrective measures and begin final corrective actions required by regulatory agreements. We will focus on closure of the remaining hazardous waste units, containment and contaminant removal of on-site groundwater plumes, treatment or disposal of legacy waste, and surveillance and maintenance of shut down facilities and post-closure sites. We will begin implementing the final corrective actions for groundwater plumes and burial grounds located in the southern portion of the site by constructing the final groundwater treatment systems and initiating the construction of caps on several landfills.

In fiscal year 2001, we will initiate construction of the final treatment system for the X–701B groundwater plume and continue removing contaminated soils from areas associated with this plume and in other areas. We will also begin construction of the final corrective action for the groundwater plume located in the vicinity of the main process buildings, for completion in fiscal year 2002.

The Department has submitted to Congress a supplemental budget request for fiscal year 2000 funding that would provide an additional $8 million for cleanup activities at the Portsmouth site. The funds would be used to accelerate the disposal of hundreds of containers of cleanup waste generated from earlier removal actions. We would also accelerate the characterization of thousands of drums of low level waste, a necessary step before the waste can be disposed. These wastes have been in storage for many years, and many of the drums are deteriorating and require constant surveillance. The fiscal year 2001 request would continue acceleration of these activities.

Nevada Test Site and Operations Office, Nevada Fiscal Year 2001 Request

(In thousands)

Defense, Post 2006 Completion	$90,212

The Nevada Operations Office manages $90 million for cleanup and waste management activities at the Nevada Test Site, as well as remediation of eight other inactive sites contaminated by past DOE nuclear testing in five states (Alaska, Colorado, Mississippi, Nevada, and New Mexico). The Nevada Test Site (NTS) is located 65 miles North of Las Vegas and encompasses 1,350 square miles (an area roughly the size of Rhode Island). In addition to the cleanup of radioactive contamination resulting from above- and below-ground testing of nuclear weapons and management of its on-site waste, NTS plays a crucial role for other DOE sites as one of the major low-level waste disposal facilities in the DOE complex.

The Department expects to complete restoration of the surface areas at the inactive test sites other than NTS and to complete shipments of transuranic waste from NTS to WIPP by fiscal year 2006. The Department will continue to operate low-level waste disposal facilities at NTS for the DOE complex. Institutional controls and groundwater monitoring will be maintained at closed sites for the foreseeable future.

We are making progress in cleaning up contamination at NTS and in addressing concerns about ground water contamination. We plan to complete the cleanup of 575, or about 28 percent, of the "release sites" at NTS by 2000. We will continue groundwater characterization efforts. Based on new scientific findings about transport of plutonium and other actinides in groundwater, the Department is increasing its efforts to characterize groundwater at NTS and improve our understanding of this complex issue. Two additional wells will be drilled in fiscal year 2001 at the underground test area at Frenchman Flat, per recommendation of the groundwater peer review group and the State, to validate ongoing monitoring and modeling of the site.

NTS will continue its important role as a disposal site for low level radioactive waste from other DOE sites. In fiscal year 2000, the Department expects to dispose of more than 14,000 cubic meters of low-level waste, more than half of which is from other DOE sites and plans to dispose of 11,000 cubic meters of low level radioactive waste at NTS in fiscal year 2001. In December 1999, the Department announced its site preferences for disposal of DOE low-level and mixed low-level waste based on the Waste Management Programmatic Environmental Impact Statement, identifying NTS as one of two disposal sites in the DOE complex, and on February 25, 2000, we published a formal Record of Decision.

The fiscal year 2001 request provides for characterization of transuranic waste drums, in preparation for shipment to begin to the Waste Isolation Pilot Plant in fiscal year 2002. We expect to open the transportation waste corridor from the Nevada Test Site to WIPP in the end of fiscal year 2001.

Weldon Spring Site Remedial Action Project, Missouri Fiscal Year 2001 Request

(In thousands)

Non-Defense, Site Closure	$53,116

The Weldon Spring Site Remedial Action Project in Missouri includes a decommissioned uranium processing plant, an abandoned quarry used as a dump site, as well as numerous vicinity properties that were contaminated by uranium and thorium processing operations conducted for nuclear weapons support in the 1950's and 1960's, similar to the Fernald Site in Ohio.

Cleanup of the Weldon Spring Site is currently planned for 2003. All contaminated material will be placed in an on-site, above-grade cell for permanent disposal. Long-term surveillance and monitoring for the disposal facility will be conducted after project completion, and the remaining land will be released for unrestricted use.

In fiscal year 1999, we continued waste placement in the 1.5 million cubic yard capacity disposal facility, with about 650,000 cubic yards of material being placed in the facility in fiscal year 1999, for a total to date of over 1.3 million cubic yards in just 2 years. We expect to complete all waste placement in fiscal year 2000, with only the completion of the facility cover, begun in fiscal year 1999, remaining. In fiscal year 1999, we finished treatment of waste pit sludge in the Chemical Stabilization and Solidification Facility, with about 180,000 cubic yards of treated sludge placed in the disposal facility, and the treatment facility was decommissioned. We began remediation of the waste pits in fiscal year 1999 and plan to complete this work in fiscal year 2000. We began restoration of the quarry area in fiscal year 1999 and will continue this work in fiscal year 2000, including the start of operations of the quarry groundwater interceptor trench. The Record of Decision that will establish the remedy for groundwater contamination at the site is expected to be finalized in fiscal year 2000.

In fiscal year 2001, the construction of the disposal facility cover will be nearly completed. We will complete the treatment of trichloroethylene contaminants in groundwater. Work will continue on cleanup of site facilities and the soil borrow area. We will also continue cleanup of the quarry area, including the groundwater interceptor trench operation.

Brookhaven National Laboratory, New York Fiscal Year 2001 Request

(In thousands)

Non-Defense, Site/Project Completion	$27,233

At the Brookhaven National Laboratory, we are continuing to treat contaminated groundwater and, in September 1999, began operation of the first off-site groundwater treatment system, to complement several systems already in operation on the Brookhaven site. This off-site treatment system, installed under EM's Accelerated Site Technology Deployment program, uses innovative technology (in-well air stripping) to extract contaminants within the well. We have nearly completed the stakeholder and regulatory review process to finalize groundwater remedies, and expect the Record of Decision to be signed this Spring. Over the remainder of fiscal year 2000 and 2001, we will design and install additional groundwater treatment systems.

In September 1999, DOE and state and federal regulators finalized the remedy for contaminated soil, which involves excavation and off-site disposal. Remedy design is underway, and we will begin soil excavation later this year. Soil excavation will continue over the next several years.

The proposed remedy for cleaning up contaminated sediments in the Peconic River is currently under regulatory and stakeholder review. The proposed remedy involves excavation of contaminated sediments, with disposal off-site, and restoration of affected wetlands. We anticipate finalizing the Record of Decision for this project by the end of fiscal year 2000, with remedial design activities beginning in fiscal year 2001.

In February 1999, the Office of Environmental Management assumed responsibility for characterizing, stabilizing, and decommissioning the Brookhaven Graphite Research Reactor. Since that time, we have undertaken substantial project plan-

ning, and field work has already begun. This project is being executed as a series of removal actions, allowing an early start to decommissioning. Under current planning, we will accomplish substantial field work by the end of fiscal year 2001, including removal of above-ground ductwork and below-ground piping.

In fiscal year 2000, the EM program will continue disposal of legacy wastes and storage, treatment and disposal of wastes generated by on-going Brookhaven operations. In fiscal year 2001, management of newly-generated waste will transfer to the Office of Science. EM will continue management of legacy waste; we expect to complete legacy waste disposal in fiscal year 2001.

Sites in the State of California Fiscal Year 2001 Request

(In thousands)

Defense, Post 2006 Completion—Lawrence Livermore National Laboratory	$48,500
Defense, Site/Project Completion—Lawrence Livermore National Laboratory	2,000
Non-Defense, Post 2006 Completion:	
Energy Technology Engineering Center	17,500
General Electric	2,000
Oakland Operations Office	10
Non-Defense, Site/Project Completion:	
Lawrence Berkeley National Laboratory	5,000
General Atomics	100
Laboratory for Energy-Related Health Research	6,500
Stanford Linear Accelerator Center	1,400
Oakland Operations Office	90
Total	83,100

Lawrence Livermore National Laboratory.—Lawrence Livermore National Laboratory consists of two geographical sites—the Main Site, an operating weapons research and development laboratory, and Site 300, located about 15 miles east of the Main Site, which has been used to test high explosives and other technologies for defense programs. The EM program is responsible for waste management of both legacy and waste generated from on-going operations. It also is responsible for remediation of the site, which includes cleanup of hazardous contaminant releases to the soil and ground water contamination at the Main Site, and releases of hazardous and radioactive materials to soil and ground water from landfills, drum storage areas, and dry wells at Site 300. Both sites are listed on the Superfund National Priorities List and have cleanup agreements with U.S. EPA and the State of California.

At the Main Site, we are making significant progress using pump and treat technology to capture and contain contaminant groundwater plumes moving offsite. We are using an aggressive cleanup strategy to contain and extract groundwater contaminants, which supplements the existing permanent treatment system network with portable treatment units, and emphasizes specific source area removal. In fiscal year 1999, we expanded the permanent groundwater treatment facilities and installed several portable treatment units to remove contaminants at several locations. In fiscal year 2000 we are evaluating several advanced technologies that would enable us to cost-effectively remediate source areas in fine-grained sediments where contaminants are hard to reach. In fiscal year 2001, we plan to apply an electro-osmosis technology to remove groundwater contaminants more effectively and to install additional extraction wells and portable treatment units. Cleanup of the Main Site is scheduled to be completed in 2007.

In fiscal year 1999, we began operation of a treatment facility to treat explosive wastes. In fiscal year 2000, we have completed testing of the Molten Salt Oxidation unit for treating mixed low-level and hazardous waste and have awarded a contract to a commercial vendor who will own and operate the treatment unit to treat waste. In fiscal year 2001 we will complete construction of the Decontamination and Waste Treatment Facility, a treatment system for mixed low-level waste, and begin operational testing.

At Site 300, we have focused on removal actions such as capping the Pit 6 Landfill to control release and getting groundwater treatment systems in place to contain off-site plume migration, and on characterizing the contamination at the site. In fiscal year 1999, we installed a cost-efficient portable groundwater unit to treat groundwater and control plume migration from the site. In fiscal year 2000, we will issue final plans and schedules for site-wide cleanup of the site and begin design

work in fiscal year 2001. We will also begin operation of an innovative groundwater treatment system in a canyon in the southeast part of the site using the Iron Filing/Geosyphon technology to remediate high concentrations of contaminants in groundwater. We plan to complete cleanup at Site 300 by 2008.

General Atomics.—General Atomics is a privately-owned and operated site, located near San Diego. General Atomics has maintained and operated a Hot Cell Facility for over 30 years to conduct both government and commercially funded nuclear research and development. EM responsibilities have been cleanup of the Hot Cell Facility and surrounding contaminated soils. In fiscal year 1999, we completed the dismantlement of the Hot Cell Facility and soil remediation activities. In fiscal year 2000, after an independent verification certification is conducted, all EM activities at the Hot Cell Facility will be complete except for surveillance and maintenance of spent nuclear fuel. The spent nuclear fuel will remain on site until 2005, at which time it will be shipped to the Idaho National Engineering and Environmental Laboratory for interim storage.

Laboratory for Energy-Related Health Research.—The Laboratory for Energy-Related Health Research is located at the University of California, Davis. Research at the laboratory originally was directed toward the health effects from chronic exposure to radionuclides using animal subjects to simulate radiation effects on humans. The Department terminated the research program and closed the laboratory in 1988. EM activities are directed toward cleaning up the DOE areas of contamination for eventual release back to the University without radiological restrictions. The site was put on the Superfund National Priorities List in 1994, and a Federal Facility Agreement was signed in fiscal year 1999.

We are achieving significant cleanup progress at this site. In fiscal year 1999 we completed contaminated soil removal from the southwest trenches and shipping of low-level, legacy biowaste. In fiscal year 2000, we will complete the closure of the mixed waste storage facility and remove three dry wells, a distribution box and piping, and Domestic Tank 2. In addition, several removal actions will be completed in fiscal year 2001, including the Colbalt-60 source, Domestic Tanks 3, the radium tank, Imhoff Facility tanks and associated leachfield. However, due to additional contamination found and volumes of waste removed during soil excavation of the southwest trenches in fiscal year 1999 and additional regulatory requirements related to health and safety, project completion has been extended to fiscal year 2004 from fiscal year 2002.

Energy Technology Engineering Center.—The Energy Technology Engineering Center is a DOE facility located on 90 acres of land leased from Boeing North American Corporation in Simi Valley, California. EM activities at this site involve remediation of contaminated groundwater; decontamination and decommissioning of the remaining radiological facilities; deactivation and cleanup of existing sodium facilities; landlord functions; and characterization and off-site disposal of waste.

In fiscal year 1999, the Department completed the decontamination and decommissioning of the Small Component Test Loop and Reactor Test Facility, with demolition planned for fiscal year 2000. In fiscal year 2000, we will also decontaminate and decommission of the Former Sodium Disposal Facility, and begin work at the Hazardous Waste Management Facility. In fiscal year 2001, we will continue decontamination and decommissioning of the Hazardous Waste Management Facility and complete below-grade work at the Reactor Test Facility. We will also dispose of 500 cubic meters of low-level waste; and continue landlord activities associated with deactivation, equipment divestiture and records retention. We now expect to complete EM's cleanup responsibilities and return the site to Boeing North American in 2007.

Stanford Linear Accelerator Center.—This 426-acre site at Stanford University is managed for DOE by the University to conduct theoretical research in high-energy particle physics. Remediation activities at the site involve the cleanup of polychlorinated biphenyls (PCB)-contaminated soil areas and several solvent-contaminated groundwater and soil areas. Fiscal year 1999 activities involved characterizing the Lower Salvage Yard and completing restoration of the master substation area. In fiscal year 2000, contaminated soils in the Research Yard and the Lower Salvage Yard were excavated, and a remedial investigation of the IR–6 Drainage Channel was completed. We will complete the Feasibility Study and pilot testing of the soil vapor extraction system at the Former Hazardous Waste Storage yard in fiscal year 2001. The Department expects to complete cleanup at the site in fiscal year 2002.

Lawrence Berkeley National Laboratory.—EM responsibilities at Lawrence Berkeley National Laboratory include storage, treatment and off-site disposal of both legacy waste and hazardous and radioactive waste generated by current operations, and remediation of contaminated soil and groundwater created from past Departmental operations. In fiscal year 2001, we will continue to excavate contaminated

soils at on-site locations and operate groundwater treatment systems to contain off-site plume migration, and will continue off-site disposal of hazardous and radioactive waste. The Office of Science will assume responsibility for newly generated waste in fiscal year 2001, but EM will continue to store, treat, and disposal of legacy waste. We plan to complete cleanup at the site by 2003.

PADUCAH GASEOUS DIFFUSION PLAN

Senator MCCONNELL. Thank you, Dr. Huntoon. Did I hear you correctly, that you are going to get Drum Mountain cleaned up by the end of the year, as you said last October?

Dr. HUNTOON. By the end of this year, that is correct.

Senator MCCONNELL. Yes. And you are working apace, are you? I mean——

Dr. HUNTOON. We——

Senator MCCONNELL [continuing]. Progress has been made?

Dr. HUNTOON. It is underway. We issued a request for proposal and have awarded the contract for it, and the work has begun.

Senator MCCONNELL. So that is a commitment we can count on being kept?

Dr. HUNTOON. Yes, sir.

Senator MCCONNELL. Thank you.

I am sure you have reviewed the draft report by the General Accounting Office regarding the cleanup plan for the Paducah plant. GAO concluded that the Department has purposefully ignored numerous hazardous waste sites known as DOE Material Storage Areas, DMSAs, that are scattered across the site.

It is my understanding that several of these waste piles pose a criticality threat. Overall, this material makes up 1 million cubic feet of uncharacterized waste that is not included in the overall cleanup plan.

GAO contends that as long as this waste remains uncharacterized, DOE can ignore the material and it will not be added to the long list of cleanup responsibilities. GAO has stated that as long as Mr. Magwood's Office of Nuclear Energy controls this material, it will remain outside of the overall scope of cleanup.

So I have several questions in that regard. First, why are not the 148 DMSAs included in the overall site cleanup plan?

Dr. HUNTOON. Senator, I believe that the reason that is, is because these areas are comprised of potentially useful materials, excess materials if you will, that were brought there for use by the company doing the work. USEC reviewed it, and it is my understanding they concluded they did not need the material, and turned it back over to the Nuclear Energy Office.

I do not know that the materials have been characterized as waste. I think it is considered excess materials. So it has not been turned over to Environmental Management to deal with it.

Senator MCCONNELL. Well, the staff tells me it is really not excess material, that it—that the cylinders really are part of the DMSAs.

Dr. HUNTOON. Okay. I am not aware of that.

Senator MCCONNELL. Okay.

Dr. HUNTOON. I thought the DMSAs were materials that were scavenged from the closure of other facilities and brought there for use.

Senator MCCONNELL. So the——

Dr. HUNTOON. I have not been brought up to speed, on exactly what is in all of those DMSAs. But that is what I was led to believe.

Senator MCCONNELL. So the rationale——

Dr. HUNTOON [continuing]. That is——

Senator MCCONNELL [continuing]. For giving——

Dr. HUNTOON [continuing]. Something we will be looking at.

Senator MCCONNELL. So the rationale for giving Mr. Magwood's office responsibility for material that, clearly, should be cleanup in our view, is what again?

Dr. HUNTOON. Well, I did not make that decision, Senator, but let me tell you: I think it is because we are dealing with the materials that are no longer wanted by anyone, and that needs to be dealt with.

I believe the DMSAs—and I will have to ask Mr. Magwood, but I believe the DMSAs were part of excess materials when the contractor took over the facility in Paducah. They are materials that need to be dealt with. But they have not been turned over to the EM program as waste to be dispositioned.

That is probably something that we will have to consider, and certainly will, when we get the GAO report.

Senator MCCONNELL. But it is hard to imagine a reason why the 57,000 cylinders of depleted uranium should not be transferred to your office immediately, is there?

Dr. HUNTOON. Well, I guess there is no reason why we should not consider it.

Senator MCCONNELL. You know, it——

Dr. HUNTOON. It is just not our responsibility the way the Department set it up.

Senator MCCONNELL. I know, but just sort of looking at it from outside, it is hard to conclude that this is not an attitude of indifference toward cleanup.

So I would like to get you to commit to fully characterizing every single DMSA and building at the Paducah plant and ensure that it is included in the overall cleanup plan.

I would hope you would provide me and the subcommittee with an appropriate time—time table and cost estimate for the cleanup of all of this material. Can you—can you make that commitment, Dr. Huntoon?

Dr. HUNTOON. I will commit to you, Senator, that I will go back to the Department and work with people to try to find out how we can best characterize that material and get an overall, total cleanup picture for Paducah.

I share your frustration with the division of labor, at many of our sites. And this is a primary example, because different work is done by different programs within the Department. That is our current division of labor and it is awfully hard sometimes to get a total picture of it.

So I will commit to you to go back to the Department and to work to provide you with a complete picture of the cleanup.

Senator MCCONNELL. And if you think it is hard for you to figure it out, imagine the frustration of those—of all of the rest of us.

Dr. HUNTOON. Yes, sir.

Senator MCCONNELL. How long do you think it will take you to pull that together and give me a report on that?

Dr. HUNTOON. I do not know. But I will get back to you just as soon as I can muster a group to look at that.

Senator MCCONNELL. Well, do it as soon as you can.

Dr. HUNTOON. I will.

Senator MCCONNELL. I would really appreciate it.

Dr. HUNTOON. I will.

ADEQUACY OF THE URANIUM ENRICHMENT D&D FUND

Senator MCCONNELL. The decontamination and decommissioning fund was created to pay for the removal and cleanup of the nation's three diffusion plants. Nuclear utility companies contribute to this fund, which has a balance of $1.6 billion.

Given the level of cleanup required at the three facilities and increased cost estimates, what is the likelihood that the fund will be adequate to cover all necessary cleanup activities?

Dr. HUNTOON. Well, Senator, I believe the fund would be adequate. I am not sure that we have always asked for the full amount required from the fund, or that our requests for cleanup in the past have not always been approved.

I think we are getting a better idea of what cleanup is going to cost at both Paducah and Portsmouth. As to whether there is enough money there, I cannot exactly say. I know that our cost for cleaning up those facilities has increased, as we have gotten better baselines, and particularly considering the ground water contamination. And we are working to understand that better.

Taking into account the recent draft GAO report that I saw this week, they have certainly questioned a lot of the assumptions that were made in the total cleanup numbers. So I think we are going to probably have to address those issues also.

DEPLETED URANIUM CYLINDER CONVERSION

Senator MCCONNELL. Finally, are there any specific prohibitions on the use of D&D funding for conversion of the depleted uranium—uranium cylinders that, as you know, have been rusting away for the past 50 years?

Dr. HUNTOON. Not to my knowledge. There may be, but I do not know of it.

Senator MCCONNELL. Okay.

Senator Murray?

CLEANUP OF THE HIGH-LEVEL WASTE TANKS AT HANFORD

Senator MURRAY. Thank you, Mr. Chairman.

Dr. Huntoon, certainly from my perspective, the department's most compelling environmental management need is the clean up of the high-level waste tanks at Hanford. These tanks are well beyond their expected life time, and many of them have already leaked. There are plumes of radioactive contamination that are slowly moving toward the Columbia River. And this is very disconcerting to those of us who live and work in the Pacific Northwest.

As you know, the department has to work through a legally enforceable consent decree that is negotiated with the State of Washington to adhere to a clearly understood schedule for the removal of the waste from these tanks and for their vitrification into a form that is suitable for disposal. But negotiations to revise the tri-party agreement, as you know, recently broke down. And regulators with the State and the regional EPA office recently imposed deadlines to keep DOE on track for building the vitrification and treatment facilities.

Can you describe for us what the Department's plans are to resolve the tri-party agreement dispute and to maintain the schedule for stabilizing and cleaning up the high-level waste in the Hanford tanks?

Dr. HUNTOON. Yes, Senator Murray. As you cited, dealing with those high-level waste tanks on the banks of the Columbia River is one of our very highest priorities. And when we talk about things that we consider are risky to the environment and people, those tanks certainly stand out in our minds as the most important.

And that is one of the reasons we undertook this privatization approach with a contractor to deal with the high-level tanks. That is now on schedule: we are to get a proposal from the contractor for that on April 24, I believe. And then we will spend the next several months, of course, negotiating with them.

If after working through that it is acceptable, in July, we owe a report to Congress. And if there are no problems with that and we get the go-ahead, we will sign the contract in August. And that is the schedule to begin the work on that plant.

And I mention that, when you asked what we were doing, because that is the first step toward dealing with the high-level waste, to have a contractor in place to build the vitrification facility. That will—the August date for signing that contract is critical to meeting the tri-party agreement milestones.

Another milestone that is very important to us is 2007, when we are supposed to begin treating waste in that new facility. That would be correct, according to our contract and according to the TPA milestones. So we have moved forward to meet these commitments.

Back to the first part of your question. As you know, we have worked with the State of Washington for many years through some rather turbulent times trying to reach agreements and deal with problems that we have out at Hanford. Most recently, we have been working with them, I think, for about the past year and a half to try to resolve some questions that they had about the Department of Energy's ability to meet some of the milestones required by the tri-party agreement.

You mentioned that the talks had recently broken down. I think maybe everyone just got tired, after about a year and a half of this. The parties have recently talked on the phone, and we are getting back to it again. Secretary Richardson and the Deputy Secretary have both engaged in this and plan to meet with State officials. The Deputy Secretary was due to go out this week. I understand he has had to delay the trip for personal reasons, so maybe in the next week or so he will get out there.

Senator MURRAY. So talks are going to resume.

Dr. HUNTOON. Yes. And we will try to resolve these issues. Everyone wants the same thing. And it is just a matter of being able to agree to things that we know just may not be possible to get the State and the regulators to have enough confidence in our efforts to meet these milestones.

When you ask about our confidence in doing this, you know, the first demonstration of our commitment that I point out is our request for a budget increase this year for this effort. We are quite serious about it. We have worked very hard this year with the contractor.

SHIPMENTS OF LOW-LEVEL AND MIXED LOW-LEVEL WASTE TO HANFORD

Senator MURRAY. Can you tell me more specifically how the Secretary plans to address the concerns that Governor Gary Locke and others have in my State, that they should not be asked to accept shipments of additional DOE low-level and mixed radioactive waste for disposal at Hanford until we do have an absolute commitment that the department will maintain the schedule for cleaning up the high-level waste in the Hanford tanks?

Dr. HUNTOON. Well, as I mentioned, they have asked for a show of commitment for cleaning up. And I think our schedule with the contractor to receive a proposal, to deal with the proposal and to try to sign a contract in August, in addition to the extra money we have put into the budget, I think, demonstrates our commitment. I know that the State has asked us to wait until we have an opportunity to have that in place before we continue the low-level waste shipments there. That is part of what we are working out with them now.

Senator MURRAY. Okay. So that will be part of the discussions you have this week or next week.

Dr. HUNTOON. We are having those discussions whenever we can.

PRIVATIZATION OF HIGH-LEVEL WASTE TANK WASTE

Senator MURRAY. All right. You have talked a little bit about the vitrification plant. Can you tell me, will the use of a privatization contractor for the Hanford tank waste vitrification be more cost effective to the taxpayer than the use of traditional DOE management and operating contractors?

Dr. HUNTOON. What we have planned and discussed in the past and what we are anticipating is a proposal that would be most beneficial to the taxpayer. The reason I qualify what I am saying is that there is much to be worked out between now and next August—we have not seen yet the plan that the contractor is bringing for the financial part of this program.

As you know, the idea of the privatization is that the contractor is assuming risk by using their own facilities and resources and all. And I think that is one of the things that we are also hoping will help us keep on track with this, because the contractor does have a lot more at risk than in the traditional way we usually do projects.

However, depending on the scoring of the money, depending on the cost to the contractor for financing the project we will have to

assess exactly what is the best deal for the government. But that is what we are after.

Senator MURRAY. Well, thank you, Dr. Huntoon. I really believe the vitrification plan at Hanford is really essential to meet the government's obligation to clean up this area. This area gave a lot in the war to win it, and we have an obligation as a country to clean it up. And we need to move forward on that. So I look forward to working with you and members of this committee to move that forward.

Dr. HUNTOON. Thank you.

Senator CRAIG. Thank you very much, Senator.

Dr. Huntoon, Dr. Itkin, thank you very much for being with us today. I have several questions I will be asking. But first of all, Dr. Itkin, thank you for restating the importance of the deep geological repository development as it relates to the overall need to handle our high-level waste, our high-level materials, and to do so in the timely fashion that we are already well out of step with. But with your energy and commitment and the dedication that this budget shows to it, hopefully we will meet those time lines that are really fundamentally very critical.

I also am going to submit for the record a policy paper from a group, the National Taxpayers Union. I would have done this, if I had had the information with me at the time, when Mr. Reicher was with us, because I think it is important when we talk about the energy initiatives that are present in this budget and the wind initiative.

Simple calculations based on these new 750 kilowatt wind turbines is that to meet the projection that is within the overall plan of the Department of Energy, these objects are as tall as the Capitol dome of the United States Capitol. They are as high as the Statue of Liberty. And it would take about 123,000 of them to meet that 5-percent factor that was talked about this morning.

So while we are talking these things, we need to make sure we maintain the perspective as to what we are doing or what we might be doing and the effects of that, and the public's acceptance or willingness to accept these kinds of initiatives.

LABORATORY DIRECTED RESEARCH AND DEVELOPMENT FUNDING

Dr. Huntoon, last year—well, last year's Energy and Water Appropriations bill prohibited the use of environmental management funds for laboratory-directed research and development. I did not agree with that action. I took opposition to that action. I have believed, and I still strongly believe, that LDRD is critical to the development of innovative and cost-effective cleanup technologies.

Last month, in testimony before the Senate Energy Committee, Secretary Richardson pledged to help get this restriction lifted in fiscal year 2001. Do you support the use of environmental management funds for LDRD? And do you think LDRD returns a value to the taxpayer?

Dr. HUNTOON. Well, yes, Senator Craig, I do support it. I know that the LDRD work done in our laboratories for environmental management has been very valuable in the past. And I would assume it would be in the future. I know that the Secretary made

this commitment. I know that the language to have that added back has been approved and sent forward.

So I am, as you are, very hopeful that it will be added back. We sorely miss the opportunity to use LDRD to solve some of our problems.

ALTERNATIVE TECHNOLOGIES FOR TREATING HIGH-LEVEL WASTE

Senator CRAIG. Well, when we are on the edge of technology and attempting to develop new technology in these areas that your area is certainly a part of, to do it in the best and soundest of ways, that kind of flexibility properly managed is critical, I think. For 3 consecutive years, beginning in fiscal 1997, the energy and water appropriations conference report has included language recommending that DOE fund backup technology for vitrification of DOE's high-level waste.

A recent national academy report, entitled Alternate High-Level Waste Treatment at the Idaho National Engineering and Environmental Laboratory, states that a technology, which would produce high-level waste by melting waste, is in the same cannister it will be disposed in had advantages over the current continuous melder process now in use.

In the past, DOE funded such a technology, the advanced vitrification system, but has recently discontinued funding this promising technology.

My question is: For Idaho's calcined waste, is DOE exploring alternatives to the type of high-level waste glass now being produced at Savannah River, alternatives which might have higher waste loading and more durability?

Dr. HUNTOON. Well, I would like to answer you in two ways. One, the advanced vitrification system that you referred to, we are going to continue funding that to help resolve some of the questions that came out of the review. It is an alternative—and for the very reasons you just stated. It is the only thing that has come to us recently that showed any promise for dealing with this issue without vitrification in the more traditional Savannah River way and would allow it to be done in the cans, as you mentioned.

The review of it, the technical review, had some real problems because a lot of the work had not been demonstrated at a scaled-up test, if you will. Because of our own requirements for such technology, if we could get it developed, we decided to fund work that would allow us to answer some of the questions that came out of the review. So we are going to continue funding to answer those questions.

One of the reasons we need alternative technologies would be the calcining work that you mentioned that is going to be set aside until we have a way to deal with its problems.

ADEQUACY OF FUNDING TO MEET COMPLIANCE AGREEMENTS

Senator CRAIG. Dr. Huntoon, under current budget projections for the out years, which are relatively flat at all DOE sites, is the Department of Energy concerned about its ability to meet all of its compliance agreements for cleanup nationwide? That would be one question. And if there is not going to be enough money, how will DOE then prioritize the cleanup initiatives?

Dr. HUNTOON. Well, Senator, the out years costs continue to hover around $185 to $200 billion total life cycle costs for the DOE complex. And we are trying to take care of high risk problems first and taking care of our compliance agreements, and doing the legally correct things in the States that we have our regulators working with us to meet our compliance agreements.

The total cost is something that is, to me, almost unbelievable. I believe that the baselines are getting better for these long-term projects, whose completions are out there in the future. We have seen that as we get closer to closure on some of our sites, like Rocky, Fernald, and Mound, our cost estimates, our baseline costs, are much more accurate because they are in the immediate time frame, closer to the center of the radar screen.

The sites that are obviously either not closing or that have large problems, such as the tanks at Hanford, those costs are in the out years up to 2070. And those are very hard for us to predict. But I will tell you that with our compliance agreements, according to the budget that we have requested now, we are in substantial compliance across the board.

We have some challenges for the out years. I think some of those will have to be revisited depending on our various schedules and these long-term projects. I think about the tank vitrification we were just talking about at Hanford. We are due to have 10 percent of that waste, 10 percent, dealt with by 2018. One of our compliance agreements with the State of Washington wants all of the waste dealt with by 2018.

So we have to go back and revisit these issues with our regulators. But I believe we have to show our commitment to them and the path that we are taking forward in order to ask regulators for some relief on some of these out year compliance agreements.

PIT 9 AT IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LAB

Senator CRAIG. What is the status of the cleanup effort at Pit 9 in Idaho?

Dr. HUNTOON. Pit 9 is part of a waste area group, WAG 7, as it is referred to out at INEEL. And that entire waste area group is about 88 acres, I believe. And Pit 9 was a 1 acre portion of it. And as you know, it was chosen to demonstrate whether we could privatize the cleanup of this area.

In the past 2 years after we ceased the contract on Pit 9 because it was not working, we have continued, in our characterization of Pit 9 and in working the cleanup of the entire waste area group.

Right now, I am talking with the folks out at Idaho about the possibility of considering an approach based on the data we have received from the more exploratory work we have done at Pit 9. This work puts probes inside the pit, as well as around the pit, to define the conditions inside the pit, and to take that information and use it for the entire WAG 7, giving me an idea of what it would take to deal with that entire 80-some acres of buried waste.

So we have utilized knowledge we gained from Pit 9. We are going to continue working with Pit 9. But I want them to address the entire waste burial ground there.

ADVANCED MIXED WASTE TREATMENT PROJECT

Senator CRAIG. Okay. My last in the series of questions, Dr. Huntoon, we have spoken privately about the Secretary's recent decision to defer the incinerator portion of the advanced mixed waste treatment facility at Idaho. Are you still confident, in light of the action, that DOE will meet its milestone commitments to the State of Idaho?

Dr. HUNTOON. Yes, sir, I am. And as we said, when you and I discussed this earlier, that it was, I think, one of the most primary, if not the primary reason that the Secretary asked for us to proceed with requesting a permit, but to set aside the incinerator in the permit until we could identify another technology, or make sure there was no other suitable technology available before we asked the State to permit the incinerator.

By doing that, we were able to make that request, and, I believe, on Friday afternoon the letter went forward to the State to ask for the permit to build, from both the contractor, BNFL, and the Idaho laboratory. It is a dual permit, a dual-requested permit. When that permit is issued, the contractor will begin working immediately to build this facility and will be on schedule then to meet all the agreements that we have for starting the shipment of waste off of the site, et cetera.

I think the idea, also, that maybe everyone did not fully understand is that the incinerator portion of the facility would only deal with about 3 percent of the waste. Therefore, we can deal with a lot of the waste, get on with it, and meet a lot of our commitments, and still work on how to best deal with that remaining 3 percent of the waste. It might be an incinerator. But it might also be that we can find some technology, and with additional resources to better define the problem, and be ready to deal with that portion of the waste before we need to. So we are on track to meet those agreements.

Senator CRAIG. Well, to your knowledge now, are you personally aware of any alternatives to incineration which currently have the appropriate level of EPA approval?

Dr. HUNTOON. No, sir, I am not aware of any. And we asked the EPA that question. And I received a letter back from the EPA headquarters office saying there are currently no other technologies available to treat mixed waste of this sort, except for incineration, or a thermal-type of treatment.

So that was one reason incineration was in the plan all along, because we knew that. But we asked again recently, and there is still nothing else available. We asked if there were any technologies about to be permitted, or were they studying some, had they had a request or something. And the answer was no to that.

The third thing is what the Secretary has established a blue ribbon committee to look out on the horizon, if you will, at the next level. Is anyone working on technology that shows a great deal of promise that DOE could sponsor some increased activity to have it ready? So we are trying every avenue we can to avoid building the incinerator. But it might be necessary at the end.

Senator CRAIG. Well, thank you very much, Doctor. That ends my questioning. I will have some questions that I will submit to

the record and to you, Dr. Itkin, I think there are important that we have as relates to Yucca Mountain and the progress that is going on there.

I know the chairman wishes he were here. His absence does not in any way reflect how he prioritizes this budget and its importance. We have encouraged the chairman of the budget committees in the House and the Senate to move very quickly to get a conference report out and to stay on or ahead of schedule with the budget process. And that is why he is not here at this moment.

But I know that others may have questions that they will submit, as did the chairman. And I have a few. We will submit those for your response.

ADDITIONAL COMMITTEE QUESTIONS

So we thank you very much for your time here this morning. Your areas of responsibility are critical to our country and, in some instances, to our States. And we appreciate the opportunity to work with you on these things.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTIONS SUBMITTED BY SENATOR PETE V. DOMENICI

WORKING WITH NNSA LABS

Question. For all witnesses: The National Nuclear Security Administration started operation as a semi-autonomous agency within the Department on March 1. The NNSA labs of Los Alamos, Sandia and Lawrence Livermore have a long tradition of supporting a broad range of scientific initiatives beyond weapons activities. As the NNSA was created, I emphasized the importance of the NNSA labs continuing their multi-program support of the Department and other federal agencies.

The enabling legislation, in Section 3264, stated that: "The Secretary, in consultation with the Administrator, shall establish procedures to provide for the use . . . of the national security labs by elements of the DOE not within the Administration . . ."

Despite the legislation, I am concerned that the NNSA labs will not continue to receive high priority funding from the Department.

Will each of you assure me that you will continue to aggressively fund projects within the NNSA labs?

Answer. (Dr. Huntoon) Under the NNSA Implementation Plan, the Office of Environmental Management (EM) maintains responsibility for environmental restoration activities throughout the DOE complex including remediation activities at NNSA facilities. As such, EM will continue to fund environmental cleanup projects and activities at NNSA facilities. In addition, EM will continue to fund projects conducted at NNSA laboratories that support the goals and mission of EM as appropriate.

Answer. (Dr. Itkin) Under the Nuclear Waste Policy Act, as amended, the Office of Civilian Radioactive Waste Management is conducting site characterization activities at Yucca Mountain, Nevada. As part of the site characterization, numerous activities such as performance assessment and modeling, hydrological studies, and waste package development, are conducted by the three national laboratories through the Program's Management and Operating (M&O) contractor. The Program expects to continue funding these activities to support the site characterization effort and, if the site is found suitable, confirmatory testing.

Question. Have discussions been initiated between your Office and NNSA to define mechanisms to maintain close collaboration, both for NNSA lab support to your Office and for your labs to support NNSA as required?

Answer. (Dr. Huntoon) Yes, discussions have been initiated between EM and NNSA on these issues. We will continue to coordinate to ensure the necessary support for both NNSA and our office.

Answer. (Dr. Itkin) The Office of Civilian Radioactive Waste Management has an ongoing relationship with all three laboratories and will continue to have the same collaborative relationship in the future. We are coordinating with NNSA in our ef-

fort to develop a bilateral agreement with the Russian Federation to collaborate on science related to geologic repositories. We anticipate funding from the nonproliferation initiatives to support work in this area in 2001, if approved by the Congress.

Question. Do you foresee any barriers to maintaining close working relations between your Office and the NNSA?

Answer. (Dr. Huntoon) No, I do not foresee any barriers to maintaining close working relations between EM and the NNSA.

Answer. (Dr. Itkin) Our current relationship both with the NNSA laboratories and the NNSA is excellent. In the future, we expect that the national laboratories will continue to be key participants in our program if the site is approved.

SPENT NUCLEAR FUEL CLEANUP PROGRAM AT HANFORD

Question. The Spent Nuclear Fuel Program has had problems in the past. The fiscal year 2001 budget request included $191.3 million to continue cleanup activities. Costs have grown substantially and completion schedules have slipped several years since the program began.

Up date the committee on the current costs and schedules to complete the removal and storage of the spent nuclear fuel in the K Basins at Hanford.

Answer. The Project to remove N-Reactor spent nuclear fuel from the K Basins at Hanford is currently on schedule to begin fuel removal from the K-West Basin in November 2000, complete fuel removal in fiscal year 2004, and complete deactivation and decommissioning of the K-Basins in fiscal year 2007 at a total project cost of $1.7 billion. All major milestones since establishment of the revised baseline in December 1998 have been met, including several interim Tri-Party Agreement milestones. To ensure that the first fuel removal milestone is met on time, the project is undertaking a phased startup initiative to test the various critical components and systems well in advance of November 2000.

This project will move 2,100 metric tons of degrading N-Reactor spent nuclear fuel from the present deficient wet storage in the K-East and K-West basins, which are within 1,500 feet of the Columbia River, into safe, dry, interim storage in the Canister Storage Building in the Hanford Site 200 Area Central Plateau (which is located about 15 miles from the Columbia River). The fuel will be stored in the Canister Storage Building until ultimate disposal in an offsite geologic repository.

Question. Are there any engineering, technical, or other issues that would significantly alter the current costs and completion schedule?

Answer. There are currently no known engineering, technical, or other issues that would significantly alter the current costs or completion schedule. The phased startup initiative is now underway to test the critical components and systems; this initiative will allow early identification of any problems in fuel removal, stabilization, and storage. The contractor has just recently proposed, and DOE has approved, a revised outyear strategy that will accelerate sludge removal, and more efficiently utilize personnel and budget resources. This revised strategy is supported by the regulators, and the schedule is currently being negotiated, since several Tri-Party Agreement milestones will need to be changed to accommodate this change in strategy. Essentially, the strategy will level project resources in the outyears by eliminating the overlap between fuel removal in the two basins, allow deletion of requirements for additional processing equipment, and accelerate completion of sludge removal by about 12 months, thereby reducing the largest risks to the environment sooner.

Question. What actions have been taken to comply with the recommendations of the Defense Nuclear Facilities Safety Board Recommendation 94–1?

Answer. There are four commitments that apply to the Spent Nuclear Fuel Project at Hanford from Defense Nuclear Facility Safety Board (DNFSB) Recommendation 94–1, Revision 2: (1) Commence fuel removal from K-Basins in November 2000; (2) Complete fuel removal from K-Basins in December 2003; (3) Commence sludge removal from K-Basins in July 2004; and (4) Complete sludge removal from K-Basins in August 2005.

Actions taken to date to meet these commitments include completing major construction activities at the Canister Storage Building and the Cold Vacuum Drying Facility, and completing upgrades to equipment at K-West Basin in support of commencing fuel movement in November 2000. Testing of new equipment and facilities and closeout construction activities have commenced at all three facilities in preparation for startup in November.

A revised outyear strategy that would accelerate sludge removal was recently approved by DOE, and is supported by the regulators and the DNFSB. This revised strategy would more efficiently utilize personnel and budget resources. The revised schedule for the strategy is currently being negotiated with the regulators and the

DNFSB, since several Tri-Party Agreement and DNFSB commitments will need to be changed to accommodate this change in strategy. Essentially, the strategy will level project resources in the outyears by eliminating the overlap between fuel removal from the two basins, allow deletion of requirements for additional processing equipment, and accelerate completion of sludge removal by about 12 months, thereby reducing the largest risks to the environment sooner. The result is that commencing sludge removal is accelerated 18 months to December 2002; completing sludge removal is accelerated by one year to August 2004; and completing fuel removal is deferred seven months to July 2004. Overall completion of the final Spent Nuclear Fuel Project DNFSB commitments, represented by completion of sludge removal, will occur about one year earlier under the revised strategy.

Question. What assurances can you give the committee that the changes to this program will ensure the project proceeds on schedule and remain within the current cost estimate?

Answer. The project to remove N-reactor spent nuclear fuel from the K-Basins at Hanford is currently on schedule to begin fuel removal from the K-West Basin in November 2000, complete fuel removal in fiscal year 2004, and complete deactivation and decommissioning of the K-Basins in fiscal year 2007 at a total project cost of $1.7 billion. All major regulatory milestones since establishment of the revised project baseline in December 1998 have been met. To ensure that the first fuel removal milestone is met on time, the project is undertaking a phased startup initiative to test the various critical components and systems well in advance of November 2000.

Fiscal year 1999 work had excellent cost and schedule performance. The budget execution resulted in less than 1 percent cost variance, and all activities were completed on schedule with less than 3 percent negative schedule variance in fiscal year 1999. The contractor is working diligently to deliver similar results in fiscal year 2000. Activities this year include closeout of construction activities and commencement of testing of systems in K-West Basin, the Canister Storage Building, and the Cold Vacuum Drying Facility. The Operational Readiness Reviews, which demonstrate readiness to start removing fuel, are scheduled for the summer and fall of 2000.

In addition to the above activities, DOE recently approved a revised outyear strategy, which is supported by the regulators, that would accelerate sludge removal, and more efficiently utilize personnel and budget resources. The revised strategy is currently being negotiated with the regulators, since several Tri-Party Agreement interim milestones will need to be changed to accommodate this change in strategy. Essentially the strategy will level project resources in the outyears by eliminating the overlap between fuel removal from the two basins, allow deletion of requirements for additional processing equipment, and accelerate sludge removal by about 18 months, thereby reducing the largest risks to the environment sooner.

Monthly project reviews are held with the contractor to review technical, cost, and schedule performance and issues. The Deputy Secretary reviews the project on a periodic basis and reviews updates on a monthly basis.

SAVANNAH RIVER SITE (SRS)—NUCLEAR MATERIALS STABILIZATION

Question. The Defense Nuclear Facilities Safety Board issued follow up recommendations in January regarding the stabilization of nuclear materials around DOE's weapon production complex. The top 4 priority items dealt with issues at the Savannah River Site.

Are you aware of the Defense Board's Recommendation 2000–1? What is your response to their recommendations?

Answer. Recommendation 2000–1 cites the Defense Nuclear Facilities Safety Board's (DNFSB) previous Recommendation 94–1 and discusses the progress made in nuclear material stabilization to date. It further details the remaining activities which need to be completed to stabilize and ensure safe storage of those materials. Recommendation 2000–1 specifically criticizes the Department for failing to meet stabilization schedules due to insufficient funding. The Recommendation describes the Board's interpretation of their enabling legislation relative to this circumstance, specifically that the Department must advise Congress and the President of any shortfall in funding that impacts Recommendation 94–1 commitments.

The Department sent its response to Recommendation 2000–1 to the DNFSB on March 13, 2000. In the response, the Department accepted the technical portions of the recommendation relating to nuclear materials stabilization. However the Department does not agree that funding is the primary factor in schedule delays and did not accept the portions of the recommendations dealing with funding.

The Department is working aggressively to complete resource loaded baselines to finish the stabilization work begun under Recommendation 94–1. By the end of May, we plan to provide the DNFSB with an implementation plan for completing the remaining Recommendation 94–1 activities, and satisfying the risk-reduction requirements of Recommendation 2000–1. It is our intention that this combined plan will serve as the Department's 2000–1 Implementation Plan, and enable Recommendation 94–1 to be closed.

Question. Why is it taking so long to resolve these issues at the SRS?

Answer. While significant progress on nuclear material stabilization has been made at SRS, factors contributing to slowing that progress include: suspending construction of a new plutonium stabilization and storage facility that was planned to be built at SRS, based on a determination that the Department needed to reevaluate plutonium storage needs at the site in light of both significant estimated construction cost increases for the facility and a Departmental decision to name SRS as the preferred location for a new plutonium disposition facility; the need to reassess the Americium/Curium Vitrification Project because development of the vitrification equipment and process proved to be more formidable than originally estimated; and the longer-than-anticipated length of time needed to both finalize an interagency agreement between DOE and the Tennessee Valley Authority (TVA) for making surplus uranium available to TVA for use in reactor fuel. DOE is now finalizing a revised implementation plan for submittal from the Secretary to the Board that reflects a resource-loaded path forward to complete all Recommendation 94–1 stabilization activities.

Question. What is DOE doing to stabilize the uranium solution in tanks outside H-Canyon? Specifically, why should this stabilization work wait on plans to convert the uranium to fuel for TVA and the Defense Board states?

Answer. DOE is continuing to work with TVA to make this surplus uranium available for use in reactor fuel. This program will result in stabilization of the existing uranium solution and solutions to be produced by dissolving certain SRS spent nuclear fuel that requires stabilization. The first step in solution stabilization is to blend it down to a low enrichment level (for this program, about 4.9 percent U–235). This activity will take place at SRS. The final step in stabilization, converting the low enriched solution to a solid oxide form, will take place at a commercial facility under contract to TVA. This work cannot begin until DOE and TVA finalize an interagency agreement, which is expected to occur this summer, and the necessary SRS [and commercial] facilities are constructed, which must be authorized by Congress. Language authorizing the start of project design in fiscal year 2000 is contained in an emergency supplemental appropriations bill. The Department cannot initiate project design until Congress acts to authorize this project.

SRS does not currently have the capability to convert the low enriched solution to oxide; however, preliminary design work to develop this capacity using on-site facilities or via a commercial vendor has begun. DOE believes it is prudent to pursue this path in parallel with the efforts to provide the uranium to TVA in the event that the TVA fuel program is not successful. If this comes to pass, SRS will blend the uranium solution to an enrichment of less than one percent U–235, convert it to an oxide either in SRS facilities or at a commercial vendor, and store the material at SRS pending ultimate disposition. This form of the material would have no commercial value and would likely be classified as waste. Even if DOE decided to devote full resources to this alternative now, it is unlikely that stabilization of the uranium solution could be accomplished as soon as with the program to provide the material to TVA.

Question. What are the costs, schedules and major milestones in dealing with this issue?

Answer. The Department's cost for the design and construction of the capital project required at SRS to enable transfer of the surplus uranium to TVA for use as reactor fuel is estimated to be approximately $100 million during fiscal years 2001–2003. An estimated additional $200 million in operating costs would be required for activities at SRS and the Y–12 Plant (Oak Ridge) during fiscal years 2001–2007. These costs cover not only the 8.7 metric tons (MT) of SRS uranium that is subject to DNFSB Recommendations 94–1 and 2000–1, but also 24 MT of other off-specification highly enriched uranium at SRS and the Y–12 Plant. DOE and TVA will share costs, as well as any potential savings generated by use of the fuel, in accordance with an Interagency Agreement expected to be finalized this summer. In comparison, the estimated cost to disposition all of the material as waste is over $900 million.

Schedules and major milestones for this and other SRS nuclear material stabilization activities will be provided in an updated plan, expected to be forwarded to the

Defense Nuclear Facilities Safety Board by the end of May 2000, to address both Board Recommendations 94–1 and 2000–1.

Question. Another high priority problem cited by the Board was remediation of highly radioactive solutions of Americium and Curium in F-Canyon at the SRS. Could you explain the issues there, particularly why DOE plans to defer vitrification of this material?

Answer. The Department intends to continue with its plan to vitrify the Americium/Curium solution currently stored in the F-Canyon facility at SRS as expeditiously as possible. The Department has encountered delays in stabilizing this material because development of the vitrification equipment and process proved to be more formidable than originally estimated. As a result, the Americium/Curium Vitrification Project was reassessed, and a new cost and schedule baseline was recently approved by DOE. DOE is committing the necessary resources to complete this stabilization project in accordance with the new baseline. A revised Implementation Plan, to be submitted to the Board by the end of May 2000, will reflect that baseline.

Question. How does DOE plan to process this material?

Answer. The Americium/Curium solution will be stabilized by vitrification, i.e., it will be encapsulated in a glass form. This will be accomplished by installing and operating new equipment, which is currently undergoing detail design, in the Multi-Purpose Processing Facility inside F-Canyon.

ROCKY FLATS

Question. Dr. Huntoon, I am impressed by the work that is being done to clean-up and close Rocky Flats by 2006. The contractor continues to make good progress on shipments of material and decontamination and decommissioning of buildings. The sooner we complete the project, the more money the department will save on safeguards, security and other overhead expenses. However, the DOE has never completed a clean-up of this scale and complexity.

Is the DOE committed to completing the clean-up by December 15 of 2006?

Answer. The Department is fully committed to its target for achieving closure of Rocky Flats by December 15, 2006. On January 24, 2000, the Department signed a new contract with Kaiser-Hill that formalizes this commitment.

The new Rocky Flats "closure" contract, which became effective February 1, 2000, includes contractor incentives for closure by 2006, as well as reductions in fee for schedule slippages. It also includes a detailed process for the identification and provision of Government-furnished services and items necessary to support the closure schedule. These services and items include the identification of receiver sites for materials and wastes, the certification of shipping containers, the coordination and resolution of issues, and other support activities. Kaiser-Hill will submit a revised Rocky Flats 2006 Closure Project Baseline in June 2000. This baseline will reflect the terms of the contract including an assumed annual funding level of $657 million.

Question. Are you confident that the regulatory framework established under the Rocky Flats clean-up agreement will stay in place, and no new regulatory changes will occur to increase the current work scope?

Answer. The Department is committed to the framework established by the Rocky Flats Cleanup Agreement (RFCA). The RFCA, which was signed in 1996, is a legally binding agreement between DOE, the Environmental Protection Agency (EPA), and the Colorado Department of Public Health and Environment (CDPHE) to achieve cleanup at the Rocky Flats site. On December 10, 1999, DOE, EPA and CDPHE jointly issued a memorandum in which they committed to: expedite the closure of Rocky Flats by 2006; provide DOE sufficient regulatory flexibility to achieve the 2006 closure goal; set priorities for cleanup work done at the site to emphasize reductions in risk and "mortgage" costs, and continue the closure process; and continue to ensure public and environmental safety consistent with the Comprehensive Environmental Response, Compensation and Liability Act, the Resource Conservation and Recovery Act, and other relevant statutes.

The regulatory framework of the RFCA identifies the processes through which final end-state decisions are made regarding the Rocky Flats site, and it grants authorization of interim cleanup actions. It also provides for interim radionuclide soil action levels. The contract for closure of Rocky Flats signed between DOE and Kaiser-Hill in January 2000 recognizes the RFCA framework. While the underlying framework of the RFCA is not expected to change, it is possible that the interim assumptions and decisions carried out under the 1996 agreement will be revised or finalized through the RFCA amendment process. If these changes result in increased work scope, a contract modification will be implemented.

Currently, the Department is in the process of responding to the recommendation from the independent oversight panel that a revised, more stringent radionuclide soil action level be formally adopted in the RFCA. The panel's recommendation is based on an assumed future land use that would allow greater access than the land use assumed in the current RFCA. A significant change to the action levels would likely require additional remediation activities, a possible extension in the remediation schedule, and a possible increase in total cost of cleanup for the Rocky Flats site.

Question. What kind of challenges would prevent the DOE from completing cleanup of Rocky Flats on time?

Answer. There are several basic factors that could prevent the Department from completing the cleanup of the Rocky Flats site on time. These include any significant reductions to the planned funding level of $657 million assumed in the new closure contract; significant changes to the regulatory assumptions underlying the Department's current cleanup plans, particularly assumptions about future land use, which guide the cleanup; inadequate contractor performance; and the Department's failure to provide the Government-furnished services and items identified in the contract, including availability of sites to receive various materials and waste streams from Rocky Flats. The Department is developing a detailed process for the identification and provision of Government-furnished services and items. The Department and Kaiser-Hill are actively working to resolve issues related to finalizing disposition paths for all material on site and will continue to work to ensure the primary receiver sites for Rocky Flats waste and material remain available as currently planned. These primary receiver sites are the Waste Isolation Pilot Plant and the Savannah River site.

ROCKY FLATS CLOSURE

Question. The budget request for fiscal year 2001 includes $664.7 million to continue clean up activities at Rocky Flats. This is the same as the amount appropriated for fiscal year 2000.

Does the fiscal year 2001 budget request for Rocky Flats maintain the 2006 clean up schedule? If not, why?

Answer. Yes, the Department's fiscal year 2001 budget request of $664.7 million for Rocky Flats fully supports the 2006 cleanup schedule.

Question. Dr. Huntoon, your statement mentions "challenges" facing the closure of Rocky flats by 2006. What specifically are these challenges, and how will they impact DOE's ability to bring about closure by 2006?

Answer. At Rocky Flats, the scope of work required to close the site by 2006 is well understood and will be documented in the revised Rocky Flats 2006 Closure Project Baseline. This new baseline will be submitted to the Department by Kaiser-Hill in June 2000. While the schedule is ambitious, the new closure contract is a valuable tool for incentivizing the resolution of any obstacles impeding site closure. One of the key challenges that must be met to successfully close the site is the removal of all special nuclear material from the site in 2002. This requires the identification of firm disposition paths for a number of nuclear material and waste streams and coordination with and availability of sites to accept the materials and waste. The Rocky Flats site also needs to finalize the details of the anticipated end state through regulatory and public processes. However, the Department and Kaiser-Hill are actively working to address these challenging issues, and the Department does not believe they will adversely impact DOE's plans to close Rocky Flats in 2006.

Dr. Huntoon, your statement cites stable funding and the ability to move nuclear waste and material from the site as possible obstacles.

Question. What are the critical issues related to movement of materials that could adversely impact the 2006 completion schedule?

Answer. The critical issue related to the off-site shipment of material and waste from Rocky Flats is the identification of firm disposition paths for a number of nuclear material and waste streams. This includes the identification of DOE sites receiving these materials and wastes, securing final agreements with these sites, storage capacity and acceptance criteria at the receiver sites, the requisite National Environmental Policy Act and regulatory approvals, and the timely certification and procurement of shipping containers and transportation services. These issues are being resolved through the Government-furnished services and items process defined under the new Rocky Flats closure contract.

Question. What is DOE's strategy for successfully making the required shipments?

Answer. The Department's strategy for successfully making the required shipments is embodied within the terms and conditions of the new Rocky Flats closure

contract. The process for the identification and delivery of Government-furnished services and items (GFS/I) provides the framework for identifying and resolving issues related to nuclear materials and waste shipment. The delivery of the GFS/I requires careful coordination among various Departmental sites and organizations. The strategy requires continued interaction with the sites receiving wastes and materials, particularly the Waste Isolation Pilot Plant and the Savannah River Site. The strategy also assumes continued management attention to resolve National Environmental Policy Act and other policy issues affecting shipment.

Question. Would providing additional funding in fiscal year 2001 over the budget request significantly affect the 2006 closure schedule?

Answer. The Department's budget request of $664.7 million for Rocky Flats fully supports the fiscal year 2006 closure schedule.

Question. Are there any on going WIPP related issues that would impact the 2006 closure schedule?

Answer. The Rocky Flats site has planned an aggressive shipping campaign for transuranic waste to achieve the 2006 closure schedule. The site currently expects to dispose of about 15,000 cubic meters of transuranic waste through 2006. While shipments to the Waste Isolation Pilot Plant (WIPP) continue, some WIPP-related issues could potentially impact the Rocky Flats shipping campaign. However, these issues are actively being addressed to avoid any impact to the 2006 closure schedule.

One potential issue relates to obtaining the remaining approval needed to ship all forms of transuranic waste. On March 9, 2000, Rocky Flats received approval from the State of New Mexico to characterize, certify, and ship debris waste under WIPP's Resource Conservation and Recovery Act (RCRA) permit. Efforts are underway to obtain a similar approval for Rocky Flats solid homogeneous waste by the end of calendar year 2000.

Another issue that could affect Rocky Flats closure relates to an ongoing judicial challenge to the WIPP RCRA permit by the Southwest Research and Information Center. The current schedule for shipping transuranic waste from Rocky Flats assumes that the existing RCRA permit remains in effect and that shipments are not affected by the litigation.

HANFORD TANK WASTE REMEDIATION PROJECT (TWRS)

Question. The fiscal year 2001 budget request includes $450 million to support the TWRS privatization project at Hanford, Washington. This is a significant increase over the $105 million appropriated in fiscal year 2000. DOE expects to make a decision in August of this year on proceeding with the construction phase of the privatization project.

What is the status of the project particularly the scientific, technical and engineering basis needed to make the project a success?

Answer. Based upon monitoring the technical progress of British Nuclear Fuels Limited, Inc., (BNFL) during the Part B–1 period and review of its April 24, 2000, proposal for the Hanford TWRS privatization project, the Department has concluded that the processes proposed for treating and immobilizing the tank wastes will meet DOE requirements. In addition, it appears that the planning, engineering, and safety basis for the process and facility will provide a successful remedy for the high-level waste tanks at Hanford. However, the Department has determined that other aspects of BNFL's April 24, 2000, proposal, including cost, schedule, management, and business approach, were unacceptable. Therefore, on May 8, 2000, the Secretary announced that the privatization contract with BNFL will be terminated. The Department will compete a non-privatized design and construction contract with a new contractor being selected by January 15, 2001. This effort may use the technical and design approaches developed by the Part B–1 contractors. Plant operating expertise, needed as input to the design, will be transitioned from BNFL to an existing contractor. The Department will solicit competitive bids for operation of the facility at an appropriate future date.

Question. How is it possible to have a credible design, one that reflects firm work schedules and milestones if these issues are not thoroughly understood?

Answer. Based on monitoring the technical progress of the BNFL team during the Part B–1 period and the review of its April 24, 2000, proposal, no significant technical issues have been identified. The technical work performed under Part B–1 is credible and may continue to be the basis for the treatment facility at Hanford under the new non-privatized contract that will replace the BNFL contract.

Question. Each nuclear waste project is unique, and TWRS is no exception-it is truly one of a kind. Therefore, what have you learned from other privatization projects that would be helpful with the TWRS project at Hanford?

Answer. The Department determined that BNFL's April 24, 2000, proposal for the Hanford privatization contract was unacceptable in many areas, including cost, schedule, management, and business approach. The price of the proposal included high contingency, fees, and return on investment which essentially shifted the financial risk from BNFL back to the Federal Government. Thus, a key benefit of privatization, in this case, was lost. Therefore, on May 8, 2000, the Secretary announced that the privatization contract with BNFL will be terminated. The Department will compete a non-privatized design and construction contract, with a new contractor being selected by January 15, 2001. Plant operating expertise, needed as input to the design, will be transitioned from BNFL to an existing contractor. The Department will solicit competitive bids for operation of the facility at an appropriate future date.

Question. How confident is DOE that this is the best approach and that all major issues are resolved such that the project may proceed without significant delays and cost increases attributable to unknown factors?

Answer. The Department determined that BNFL's April 24, 2000, proposal for the Hanford privatization contract was unacceptable in many areas including cost, schedule, management, and business approach. Therefore, on May 8, 2000, the Secretary announced that the privatization contract with BNFL will be terminated. The Department will compete a non-privatized design and construction contract, with a new contractor being selected by January 15, 2001. Plant operating expertise, needed as input to the design, will be transitioned from BNFL to an existing contractor. The Department will solicit competitive bids for operation of the facility at an appropriate future date. Even though this change in acquisition approach has been necessary, the technical concept and the design work accomplished to date provide a sound approach to treatment of the high-level waste at Hanford.

Question. The GAO has indicated in their report RCED 99–13 that the BNFL melter technology is unverified for Hanford application. Do you agree with the GAO assessment? If not, why?

Answer. We do not agree with the GAO assessment. The assessment was completed at a point in the project in which little specific vitrification testing had been completed. Since that time, BNFL/GTS Duratek has used its pilot melter facility with simulated wastes to demonstrate that the vitrification technology for low activity waste will produce an acceptable glass product at production rates that meet or exceed design requirements. Approximately 80 metric tons of glass have been produced with this melter during Phase I, Part B–1. The team has also successfully tested its technology for high activity waste using actual high-level wastes at a bench scale. In addition, a number of the design concepts (e.g., glass bubblers, pouring system design) have been verified, and production rates 20–50 percent above design requirements have been achieved. From this information BNFL/GTS Duratek has been able to further refine the vitrification technology process and equipment.

Question. Should the BNFL joule melter be demonstrated with Hanford high activity wastes (either simulated or actual) with the anticipated waste loading prior to proceeding with construction or agreeing to a price for processing vitrified waste?

Answer. Pilot melter testing using simulated high-level waste feed compositions and laboratory vitrification of actual Hanford tank waste samples have been completed by BNFL/GTS Duratek. Testing will continue to further refine glass compositions and process strategies.

Question. Hanford high level wastes are known to vary widely in chemistry due to on going chemical reactions in the tanks. How does this variability affect DOE's plans for obtaining a homogenous waste feed by blending the wastes?

Answer. DOE does not plan on blending tank wastes prior to the year 2018. DOE has had numerous samples of tank waste tested and has found that the waste feed specifications capture the composition of approximately 90 percent of all Hanford wastes. These wastes can be processed in a vitrification facility without blending. The equipment in the tank farms, planned upgrades, tank space availability, and operational experience will be sufficient to accomplishing blending needed for 2018.

Question. What is the government's liability in the event DOE cannot deliver a homogenous waste feed to BNFL?

Answer. The Department determined that BNFL's April 24, 2000, proposal for the Hanford privatization contract was unacceptable in many areas, including cost, schedule, management, and business approach. Therefore, on May 8, 2000, the Secretary announced that the privatization contract with BNFL will be terminated. The Department will compete a non-privatized design and construction contract, with a new contractor being selected by January 15, 2001. Under either a privatized or non-privatized contract, the Government would be liable if the proper feed cannot be delivered. However, in the latter type of contract, the liability would not include

costs specifically associated with privatization, such as financing and return on investment.

Question. Has blending of nuclear waste on the scale necessary at Hanford ever been demonstrated or accomplished?

Answer. Planned blending to achieve acceptable feed will not occur until after the year 2018. Incidental mixing of waste from different tanks takes place currently in the routine transfers at Hanford. Waste from one tank is transferred into another after verifying compatibility of the two wastes. One of the most recent examples occurred in 1998–99 with the transfer of waste from Tank C–106 (about 190,000 gallons) to Tank AY–102 (about 700,000 gallons). The purpose for the transfer was to eliminate a safety concern in Tank C–106; however, as part of the process, wastes from both tanks were successfully combined in a one million gallon tank.

Question. Is substantial piping required in the blending process and in delivery of the waste to BNFL for vitrification? Can the piping become clogged and if so, what steps will be taken to avoid clogging?

Answer. The equipment presently in the tank farms, along with the planned upgrades to the tank farms, will fully support all future blending (after 2018) and feed delivery activities. Currently, Hanford is planning to upgrade existing equipment (pump pits, ventilation, valves, etc.) and install new pipelines that connect the various tank farms to each other and to the processing facilities. These are necessary for general retrieval, not blending, but will also be utilized for blending activities after 2018. The piping has the potential to become clogged; however, several preventative measures are in use and are planned for the future. DOE is performing laboratory tests on physical properties of the waste in order to determine dilution and thermodynamic parameters that will prevent formation of solids in the pipes. Control of these parameters is incorporated in the current plans for waste feed delivery. DOE plans to dilute the waste prior to and during transfers. Also, DOE has included redundancy in the piping plans. DOE will connect four pipelines to the processing facilities, two primary lines and two back-ups. If a primary line clogs, DOE will use a back-up line during the period the primary line is being unclogged. Hanford occasionally experiences pipeline clogs on some of the tank-to-tank transfers. These are readily unclogged by injecting hot water flushes into the clogged pipeline.

Question. What is the expected cost to the government for making a blended, homogenous waste feed?

Answer. The waste that will be delivered to the processing plant prior to 2018 will not need to be blended or homogeneous. This waste will conform to waste feed specifications without blending. The equipment presently in the tank farms and the planned upgrades will be sufficient to accomplish any blending needed after 2018. Costs to perform those future blending operations will be comparable to current costs for routine transfers.

Question. Will it be possible to insert new, more efficient and less costly waste treatment technologies into the TWRS project at Hanford? Please explain.

Answer. Based on monitoring of the technical progress of the BNFL team during the Part B–1 period and review of its April 24, 2000, proposal, the Department believes the technical approach and design are sound. The process facilities and equipment concepts for the treatment facilities are being designed for remote maintenance and replacement. Using these design concepts, it is possible that newer, more efficient technologies could be employed in the treatment facilities as they become cost effective to do so. Examples include higher temperature melters and the use of different radionuclide separation technologies (e.g., improved resins and/or inorganic engineered materials). DOE continues to invest in related science and technology development through its High-Level Waste Focus Area. The results from this program are targeted toward eventual applications at TWRS.

SCIENCE AND TECHNOLOGY

Question. The budget request for Science and Technology totals $196.5 million for fiscal year 2001 compared to $236.7 million for fiscal year 1999 and $229.4 million for fiscal year 2000.

Are the basic science and technology needs of the program declining or is there some other reason that accounts for this continued downward trend in the Science and Technology program?

Answer. The Office of Science and Technology continues to review technology needs as sites modify their cleanup programs or identify more aggressive approaches to conducting their work. While intractable problems still exist, and there is still a definite need for the further development of new technology, our thrust has turned to ensuring widespread deployment of innovative technologies to meet clo-

sure site schedules. We are working with our field offices to ensure that new technologies are applied where they are most needed.

We are now placing added emphasis on the deployment of technologies that are already developed. During our recent reorganization of the EM program, we created a Deployment Assistance Team whose mission is to provide the tools needed to accelerate and increase the deployment of new technology and the delivery of key products to address the needs of site closure and project completion activities.

Question. For example, is DOE pursuing any alternatives that could be used in the event the BNFL vitrification melter process proposed for the Hanford waste cleanup program fails or does not perform as expected? Please explain.

Answer. The successful operation of high-level waste (HLW) vitrification at the West Valley Site and at the Defense Waste Processing Facility at the Savannah River Site has provided confidence that vitrification of HLW at Hanford can be equally as successful. Additionally, BNFL has successfully vitrified simulated Hanford (low activity) wastes in the Duratek facility in Columbia, Maryland, at production rates 20–50 percent above design requirements. The Department continues to seek technical improvements in current vitrification methods for better cost effectiveness and reliability.

However, the recognized complexity and diversity of HLW at Hanford and the high total life cycle costs at Hanford have led the Department to commission a review of alternatives, in order to provide recommendations by the end of this calendar year on the specific new or different technologies that should be comprehensively developed as cost saving alternatives over the next several years. Specific emphasis is on alternatives to vitrification that could reduce the total life cycle costs, including final disposal costs.

EM PRIVATIZATION

Question. Dr. Huntoon, as you know, CBO has changed the outlay scoring for DOE privatizations. As a result, the outlays for the Hanford tank privatization jump up to 53 percent. There is now no scoring advantage to the Appropriations Committee for DOE to use privately financed contracts for these projects because they cost the Appropriations Committee the same (in the near term) as a standard, multi-year procurement.

In fact, since the private financing rates are substantially over government borrowing rates, the total project costs are much higher under the privatization contracts.

Why should the Congress proceed with a privatization proposal that will dramatically increase the cost of a project as a result of the cost of private financing versus the cost of government financing?

Answer. The Department determined that British Nuclear Fuels Limited, Inc.'s, (BNFL) April 24, 2000, proposal for the Hanford privatization contract was unacceptable in many areas, including cost, schedule, management, and business approach. Therefore, on May 8, 2000, the Secretary announced that the privatization contract with BNFL will be terminated. The Department will compete a non-privatized design and construction contract, with a new contractor being selected by January 15, 2001. Plant operating expertise, needed as input to the design, will be transitioned from BNFL to an existing contractor. The Department will solicit competitive bids for operation of the facility at an appropriate future date.

Question. Do you still expect construction to be complete in fiscal year 2007 at a cost of $5.4 billion for Phase I?

Answer. The Department determined that BNFL's April 24, 2000, proposal for the Hanford privatization contract was unacceptable. Therefore, on May 8, 2000, the Secretary announced that the privatization contract with BNFL will be terminated, and the Department will compete a non-privatized design and construction contract. The request for proposals, to be issued in August 2000, will ask for proposals that would enable the Department to meet the 2007 milestone under the Tri-Party Agreement. The costs will not be determined until a new contractor is awarded by January 15, 2001.

NUCLEAR WASTE DISPOSAL

Question. The fiscal year 2001 budget request for the Nuclear Waste Disposal program at Yucca Mountain totals $470.3 million. This includes $358.3 million of non-Defense discretionary funding and $112 million for the Defense portion of the program.

The Department will issue a comprehensive Final Environmental Impact Statement contemporaneously with the finalization of the Site Recommendation. A Site Recommendation Consideration Report will be prepared, and if the site is deter-

mined to be suitable and the Secretary of Energy decides to recommend the site for repository development, the Site Recommendation Report will be submitted to the President in fiscal year 2001. If the President and then the Congress, accept the Site Recommendation, a License Application will be prepared and submitted to the Nuclear Regulatory Commission in fiscal year 2002.

Since the submission of the Viability Assessment in December 1998, have you found any scientific or technical fault with the Yucca Mountain site that would suggest that it is not a suitable site for a permanent geologic repository?

Answer. The fiscal year 2001 budget request for the Nuclear Waste Disposal program at Yucca Mountain totals $437.5 million. This includes $325.5 million of non-Defense discretionary funding and $112 million for the Defense portion of the program.

The scientific studies and analyses we have conducted since the Viability Assessment indicate that Yucca Mountain remains a promising site for a geologic repository. We are therefore pursuing the work that will support a Secretarial decision in 2001 on whether to recommend the site to the President for development as a repository.

Question. There have been ongoing concerns related to the migration of water at the site. Is this something new, and have you been able to assess the problem? Do you believe this to be a problem?

Answer. To date, Yucca Mountain remains a promising site for development as a geologic repository. The movement of water is an important consideration which is being examined. Our understanding of how water flows through the saturated and unsaturated zones is integrated in a total system performance assessment that models and predicts how a repository may perform within Yucca Mountain. At this time, given our understanding of how a repository may perform, we do not anticipate problems with the migration of water at this site.

Question. What is your schedule for major repository milestones? Have you met last years goals? What, in your judgement are the impediments to meeting future milestones?

Answer. In fiscal year 1999, we met the major milestones for that year of issuing the Viability Assessment and Draft Environmental Impact Statement and completing a formal, independent peer review of the total system performance assessment (TSPA) that supported the Viability Assessment. The peer review findings and recommendations will be considered in developing the TSPA to support decisions on site recommendation. We also completed repository and waste package designs for use in developing the TSPA and other documentation that will support decisions on site recommendation. We are now further developing those designs based on the results of our analyses to reflect recommendations made by the Nuclear Waste Technical Review Board.

Milestones leading to the opening of a permanent repository, and potential impediments to the schedule, are identified and discussed below. Because these milestones are on the critical path to the start of repository operations, a factor that jeopardizes one date may jeopardize subsequent dates. The greatest impediment to the schedule would be inadequate funding, and recently, our ambitious schedule has been made more challenging by a funding shortfall in excess of $100 million during the past three years. Note that the discussion of milestones below assumes that the Department's work would not be curtailed or delayed by court orders due to potential lawsuits filed by parties who oppose implementation of the Nuclear Waste Policy Act (NWPA).

—Prepare Site Recommendation Consideration Report, late 2000. OCRWM will issue a Site Recommendation Consideration Report in late 2000. After that, OCRWM plans to hold public hearings in the vicinity of Yucca Mountain to inform residents of a possible site recommendation.

Potential schedule risk: At this time, we identify no major factors that would jeopardize this date.

—Complete final environmental impact statement (EIS) to support the Secretary's submittal to the President of a site recommendation. The NWPA requires that an EIS accompany a Secretarial site recommendation. The Department issued a draft EIS for public comment in fiscal year 1999 and comments are now being reviewed. The final EIS will be completed in fiscal year 2001.

Potential schedule risk: At this time, provided sufficient fiscal year 2001 funding, we identify no major factors that would jeopardize completion of the EIS in fiscal year 2001.

—Prepare and submit a site recommendation, fiscal year 2001. After holding public hearings in the vicinity of Yucca Mountain and reviewing public comments, OCRWM will advise the Secretary on site recommendation. If the Secretary decides to submit a site recommendation to the President, this may trigger a se-

ries of steps defined by the NWPA. At least 30 days prior to that recommendation, the Secretary must notify the Governor and legislature of Nevada of his intent to submit the recommendation. If the President, upon receipt of the Secretary's recommendation, decides to recommend the site to Congress, the Governor and legislature of Nevada may submit a notice of disapproval to Congress. If a notice of disapproval is submitted, Congress may act in accordance with the timetable and procedures in the NWPA to approve the Presidential recommendation. If Congress approves it, the site designation takes effect.

Potential schedule risk: Insufficient funding could affect this schedule. In addition, decisions by the Secretary, the President, or Congress not to recommend or approve the site for development as a repository will affect the timetables and procedures to be followed under the NWPA.

—Develop and submit a license application, fiscal year 2002. If the President and Congress approve development of a repository at the Yucca Mountain site, the Department will submit a license application to the NRC.

Potential schedule risk: A license application is a complex document, the preparation of which requires long lead time. Because of budget shortfalls over the past few years, OCRWM has had to defer much of the work on the license application in order to remain within budget and on schedule for the site recommendation. The fiscal year 2002 date for submittal of a license application will be jeopardized if OCRWM receives less funding than the current funding profiles indicate is required.

—Obtain construction authorization from the NRC, fiscal year 2005. The NWPA requires the NRC to issue its decision on authorization of repository construction within three years of the date that the Department submits a license application.

Potential schedule risk: Our careful planning for many years with the NRC to prepare for licensing should serve to mitigate any delays. However, the NWPA allows NRC to extend their review for an additional 12 months. If this provision is exercised, our schedule would be impacted. An additional factor that might impact this schedule is scientific uncertainty.

—Submit license application amendment to receive and possess waste, fiscal year 2008. The Department will have to update its license application and submit it to the NRC in order to obtain authorization to receive and possess waste.

Potential schedule risk: With sufficient funding, we see no factors that would jeopardize this milestone. An additional factor that might impact this schedule is scientific uncertainty.

—Start waste acceptance and emplacement, fiscal year 2010. If construction begins in 2005 and proceeds as planned, waste emplacement could begin by 2010.

Potential schedule risk: Inadequate funding would jeopardize this date. An additional factor that might impact this schedule is scientific uncertainty.

OUT-YEAR FUNDING REQUIREMENTS

Question. Budget constraints forced Congress to reduce the funding for the program in fiscal year 2000. What impact has the funding reduction have on your progress in fiscal year 2000? Would you give the Committee your views on the out-year funding requirements for the Radioactive Waste Management Program?

Answer. Over the past three years (FY 1998, fiscal year 1999, and fiscal year 2000), the Office of Civilian Radioactive Waste Management has received over $100 million less than the Administration's budget request for the Program. In each of those years, the Program has adjusted its efforts to focus on those science and engineering activities most essential to support a decision on site recommendation. Although we have deferred planned work, the Department is still on schedule to complete the work necessary for a site recommendation in 2001 and a License Application to the Nuclear Regulatory Commission in 2002. The fiscal year 2001 budget request of $437.5 million is necessary to complete work the Program deferred due to the funding shortfalls.

Should the Office of Civilian Radioactive Waste Management Program receive less than the requested amount in fiscal year 2001, and depending on the extent of the reduction, the overall quality of the science and engineering supporting a site recommendation decision could be jeopardized and potentially delay that decision. In turn, submission of the license application in 2002 could be substantially delayed.

If the site is recommended by the President and approved by Congress, the need for adequate funding will become necessary to maintain schedules for waste emplacement in 2010. The total funding profiles, including Yucca Mountain, transportation, and program management, for fiscal year 2001–2010 is as follows:

FUNDING REQUIREMENTS

[In millions of dollars]

Fiscal year	Program funding	Fiscal year	Program funding
2001	438	2006	1,397
2002	438	2007	1,341
2003	871	2008	1,220
2004	935	2009	1,210
2005	1,289	2010	950
Total			10,089

Question. What is the annual out-year funding requirements to keep the program on schedule?

Answer. The Office of Civilian Radioactive Waste Management Program will require significant increases in funding if the site is recommended by the President and the site designation is effective. Our outyear estimates, that we provided in the recently issued revision to the Program Plan, range from over $870 million in fiscal year 2003 to almost $1.3 billion in fiscal year 2005.

The Program funding estimates reflect the Department's best projections, given the scope of work identified and the planned schedules. The total funding profiles, including Yucca Mountain, transportation, and program management, for fiscal year 2001–2010 is as follows:

Funding Requirements

[In millions of dollars]

Fiscal year	*Program funding*
2001	438
2002	438
2003	871
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2005	1,289
2006	1,397
2007	1,341
2008	1,220
2009	1,210
2010	950
Total	10,089

DEFENSE NUCLEAR WASTE APPROPRIATION REQUIREMENTS

Question. What is the status of the Defense Nuclear Waste appropriation requirements? Is it paid up?

Answer. Through fiscal year 1999, approximately $1.2 billion has been appropriated from the Defense Nuclear Waste Appropriation. As of the end of fiscal year 1999, the outstanding defense obligation was approximately $1.5 billion, which needs to be fully paid up before the defense waste can be accepted.

DEFENSE NUCLEAR WASTE FUTURE GROWTH REQUIREMENTS

Question. How must the Defense portion of the program grow in order to meet your major milestones and completion schedule?

Answer. In the fiscal year 2001 budget request, the Department is requesting Defense Nuclear Waste Disposal appropriations that are level with fiscal year 2000. However, this does not reflect the necessary appropriations to ensure that the defense obligations are fully paid up prior to the acceptance of defense waste for disposal.

The outstanding defense obligation must be fully paid up prior to accepting defense waste for disposal. The outstanding balance as of the end of fiscal year 1999 is approximately $1.5 billion. Various funding scenarios have been developed that will result in a zero outstanding defense balance by 2010. The following table depicts three such scenarios. The first scenario mirrors the fiscal year 2001 budget request for fiscal year 2002–2005 and then shows the increase that is required for the fiscal year 2006–2010 outyears to reduce the balance to zero. Alternative 1 is the

profile assumed in the "Report on Assessment of Fee Adequacy Based on fiscal year 1999 TSLCC Update," prepared by our M&O contractor, which is available on OCRWM's Internet Home Page. Alternative 2 is a profile that has the advantage of producing a zero balance while also smoothing out the large increases that would be required with either the fiscal year 2001 budget request profile or the profile in the fee adequacy report.

DEFENSE NUCLEAR WASTE DISPOSAL APPROPRIATION

[In millions of dollars]

Fiscal year	Fiscal year 2001 budget request profile	Alternative 1	Alternative 2
2002	112	200	250
2003	113	200	350
2004	116	200	450
2005	122	630	540
2006	810	630	540
2007	810	630	540
2008	810	630	540
2009	810	630	540
2010	810	620	535

NUCLEAR WASTE FUND CURRENT BALANCE AND FUTURE ESTIMATE

Question. What is the current balance in the Nuclear Waste Fund, and what is the current estimate to construct the waste storage facility at Yucca Mountain?

Answer. As of February 29, 2000, the current balance in the Nuclear Waste Fund was $9.0 billion. This balance does not take into account outstanding one-time fee payments and defense appropriations. The Program funding estimates reflect the Department's best projections, given the scope of work identified and the planned schedules. The total funding profiles, including Yucca Mountain, transportation, and program management, for fiscal year 2001–2010 is as follows:

Funding Requirements

[In millions of dollars]

Fiscal year	*Program funding*
2001	438
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2008	1,220
2009	1,210
2010	950
Total	10,089

NNSA IMPACTS AT SAVANNAH RIVER SITE

Question. Dr. Huntoon, the NNSA legislation placed the tritium operations at the Savannah River Site under the NNSA, but the overall Savannah River Site is being managed by Environmental Management..

Are NNSA activities at SRS under the control of NNSA personnel, or EM personnel?

Answer. Under the NNSA Implementation Plan, the SRS Field Manager is also serving as the Field Manager for NNSA Operations and in this capacity is accountable to the NNSA Deputy Administrator for Defense Programs. Therefore, NNSA activities are under the control and direction of the NNSA, not EM.

CARLSBAD ISSUES

Question. When the Request for Proposals for a new contractor to manage the WIPP site was issued, it dropped requirements for economic development activities. These activities have been essential in building a supportive local community and infrastructure around key department facilities. It has proven its value to Department missions with the progress at Sandia and Los Alamos.

Why were economic development requirements dropped from the solicitation for the next WIPP management contractor?

Answer. The current WIPP Request for Proposals (RFP), like other recent RFPs and contracts issued by DOE, does not require the contractor to fund economic development. This approach is consistent with current Departmental policy.

However, it is the policy of DOE to be a constructive partner in the geographic region in which DOE conducts its business. The basic elements of this policy include: (1) recognizing the diverse interests of the region and its stakeholders, (2) engaging regional stakeholders in issues and concerns of mutual interest, and (3) recognizing that giving back to the community is a worthwhile business practice. The current WIPP contract solicitation requires the prospective contractors to address this policy in their proposals.

Question. Dr. Huntoon, does the Department intend to live up to its commitment to the Carlsbad region to support missions in the area that go beyond operation of WIPP? What is it doing to support this commitment?

Answer. It is DOE's policy to be a constructive partner in the geographic region in which DOE conducts its business. The basic elements of this policy include: (1) recognizing the diverse interests of the region and its stakeholders, (2) engaging regional stakeholders in issues and concerns of mutual interest, and (3) recognizing that giving back to the community is a worthwhile business practice. The current WIPP contract solicitation requires prospective contractors to consider and address this policy in their proposals.

Question. Does the Department support a leadership role for the Carlsbad Office, as they have already demonstrated in the application of technologies to address problems along the border?

Answer. The Department is supporting the President's Southwest Border Initiative to bring the collective expertise of the Department and other Federal agencies to bear on issues in the border region. Additionally, on April 6, Secretary Richardson announced the Southwest Border Energy & Technology Collaboration Program to partner with universities in border states to focus on ways to reduce pollution while introducing new energy-related manufacturing options that will result in sustainable economic development in the region.

We expect to use the expertise of our national laboratories, field offices and area offices, including Carlsbad, and Headquarters program offices in these efforts. However, due to the cross-cutting nature of the issues and the need to coordinate across the Department and with other Federal agencies, we plan to retain the leadership role at Headquarters. Not only will this allow for maximum ability to leverage the necessary resources, it will allow Carlsbad to maintain its focus on achieving its critical mission of getting WIPP fully operational so that we can complete cleanup at our sites.

Question. When the Secretary made his April 6 announcement of a new technology collaboration in the border region, which sounds very similar to S.397, he did not mention leadership by the Carlsbad office as the bill demands. Why not?

Answer. As you know, DOE supports the President's Southwest Border Initiative by using the resources and expertise of all of the Department's programs and national laboratories to address border issues. On April 6 of this year, Secretary Richardson announced the "Southwest Border Energy & Technology Collaboration Program" to partner with universities in border states to focus on ways to reduce pollution while introducing new energy-related manufacturing options that will result in sustainable economic development in the region. We expect to manage this program from Headquarters in order to coordinate most effectively with other DOE offices and other Federal agencies. Because of the cross-cutting nature of the initiative and the need to ensure that Carlsbad stays focused on its critical mission—getting WIPP fully operational so that we can complete cleanup at our sites—we prefer to coordinate this program from Headquarters.

WIPP

Question. Dr. Huntoon, why did the Department remove $9.3 Million from Sandia National Laboratories' WIPP-funding for waste characterization costs at other sites, when waste characterization costs are not a part of the WIPP budget? [Such costs have always been part of individual site budgets.]

Answer. The fiscal year 2000 WIPP budget was realigned in order to implement the provisions of the WIPP Resource Conservation and Recovery Act (RCRA) permit, which was issued in October 1999. These funds were used by the Carlsbad Area Office and the sites to realign their transuranic waste programs to meet the requirements of the permit, enabling them to ship to WIPP. By realigning these funds, the Department was able to pay for the work required under the permit and more effectively manage the national transuranic program in order to resume shipments under the RCRA permit.

Question. The funds in question supported key work at Sandia that is essential for WIPP continued performance, especially for the re-certification required on five year intervals. Will the Department restore the $9.3 Million to Sandia in Fiscal year 2001?

Answer. Sandia National Laboratory's efforts on WIPP primarily support the requirement to recertify the facility to meet EPA standards on a five-year cycle. The Department believes, now that WIPP is operational, efficiencies will be realized that eliminate the need to restore the $9.3 million fiscal year 2000 funding to Sandia National Laboratory in fiscal year 2001. Proposed fiscal year 2001 funding for Sandia National Laboratory for the WIPP recertification effort is $19.8 million.

WIPP—WASTE STORAGE TRANSPARENCY TEST BED

Dr. Huntoon, the National Defense Authorization Act for fiscal year 2000 stated that "The committee directs the Department of Energy to develop a Plan to establish a demonstration and training program using the WIPP repository system as a test bed facility to develop transparent monitoring technologies for waste storage and to demonstrate them to the international community. The Department will report its plan to the Congress by March 1, 2000."

This Report is now long overdue.

This use of WIPP could be used to enhance the mission of the Carlsbad facility to support an area of international importance.

Question. When will the DOE report on the use of WIPP as a test bed for international transparency of waste storage technologies be delivered to Congress?

Answer. The Office of Environmental Management and the Office of Nuclear Non-Proliferation are preparing this report. The report will be forwarded to the Congress in the near future.

QUESTIONS SUBMITTED BY SENATOR THAD COCHRAN

VITRIFICATION TECHNOLOGY

Question. The DOE Safety Division, the National Academy of Sciences and the GAO have warned against DOE placing all its reliance on a single high level nuclear waste vitrification technology. Should DOE have a backup vendor and an alternate technology under development?

Answer. Given the extensive and successful testing, demonstration, and independent reviews conducted to date on the vitrification technologies proposed for treatment of Hanford's tank wastes, DOE has confirmed, with a high degree of confidence, the technical performance of the proposed vitrification technologies. The proposed technologies are mature and robust and are expected to perform as designed and be capable of processing essentially all of Hanford's tank wastes. The technologies are in existence and in use around the world, and have been extensively and successfully tested during the design phases on Hanford's tank waste. The technologies have been applied on a production scale basis using validated simulants and on a bench scale basis using actual high-level wastes. Additional samples have been tested on a pilot-scale basis using validated simulants; and a pilot-scale melter, operating successfully in Columbia, Maryland, is continuing to test the technologies. In addition, similar technologies are currently being used for high level waste (HLW) vitrification at the West Valley Demonstration Project in New York and the Defense Waste Processing Facility at the Savannah River Site in South Carolina.

Nevertheless, given the significant life-cycle costs related to HLW disposition across the EM complex and in response to previous years' Energy and Water Development Appropriations Conference Report language, the Department is looking at alternatives to the current pre-treatment processing and vitrification processes. Fiscal year 2000 activities include funding for additional bench-scale tests of the Advanced Vitrification System (AVS), a concept to vitrify high-level waste in individual canisters. Future development and funding of AVS and other technologies will be contingent on results showing potential high payback.

Question. Concerns have been raised that DOE's Waste Acceptance Product Specifications' focus only on existing technology and a borosilicate glass vitrified product may serve as a barrier to the development of better technology for waste vitrification. What is your response?

Answer. The Department issued the Waste Acceptance Product Specifications (WAPS) in 1996 and the latest revision (3) in 1999. The WAPS were coordinated with the Department's Civilian Radioactive Waste program and cover the requirements that a producer of a high-level waste (HLW) form must meet. The present HLW glass production at West Valley and at the Defense Waste Processing Facility at the Savannah River Site are producing glass that will meet these requirements. The glass product must be comparable to a "benchmark" glass, and any product that is comparable in characteristics is considered to meet the requirements.

Development of HLW glasses in the United States and abroad has focused on borosilicate glass. Thus, the highest degree of confidence and experience is with borosilicate glass. However, if there were sufficient incentive and adequate performance, other HLW forms may also be determined to be acceptable in the future. Such a determination will require that valid data are available to meet the WAPS, including leaching data acceptable to the U.S. Environmental Protection Agency to allow delisting of components that are regulated as hazardous under the Resource Conservation and Recovery Act.

The Department is reviewing the incentives and performance requirements for other forms of HLW and the available technologies to produce other waste forms with lower volumes. The results of this review will provide a basis for longer term research and development.

Question. Is there any high level waste vitrification technology (existing or under development) with the potential to accept variable chemistry waste feeds with minimal or no blending? In answering this question, please address the Advanced Vitrification System and its potential use at INEEL.

Answer. Each situation is unique and requires specific investigations as to the variability of the chemistry that may be acceptable. In all cases, the product must be evaluated against predetermined criteria to determine its consistency, homogeneity, and acceptability as the composition varies. Blending of the initial feed materials is considered necessary to establish uniformity for quality control of the solidified product in canisters, because sampling of a canister filled with glass is not practical.

A number of technologies exist that have the potential to process a wide variability in feed compositions, with comparable blending, by achieving higher temperatures, e.g., cold-wall crucible melters under development in France and Russia, various plasma arc furnaces, and the Advanced Vitrification System under development by the Radioactive Isolation Consortium. As concentrations of certain chemicals become higher, higher melting temperatures are required to produce an acceptable product. We anticipate that wastes from some of the tanks at Hanford and the Idaho National Engineering and Environmental Laboratory waste may benefit from vitrification at higher temperatures to assure an economical low volume of solidified waste.

Question. Is there any high level waste vitrification technology (existing or under development) with the potential to allow the HLW feed loading to be above 60 percent, greatly reducing the number of canisters for disposal?

Answer. The amount of waste oxides that can be included in a waste form directly affects the melting temperature and the quality of the final product. At present, we do not have data that show that we can achieve an acceptable product with waste oxide loadings at 60 percent or above. A number of technologies exist that have the potential to process higher waste oxide loading by achieving higher temperatures, e.g., cold-wall crucible melters under development in France and Russia, various plasma arc furnaces, and the Advanced Vitrification System under development by the Radioactive Isolation Consortium. However, no assurance exists that the products are acceptable according to the DOE Waste Acceptance Product Specifications.

Question. The DOE standards for vitrified product have been judged by the Nuclear Regulatory Commission to be unrelated to the regulatory standards for disposal in a repository. DOE terms the standards "Waste Acceptance Criteria." Why is DOE specifying a product to be delivered when that product has not been approved by the NRC for disposal?

Answer. The DOE Office of Civilian Radioactive Waste Management (OCRWM) has developed acceptance requirements for commercial spent nuclear fuel and Government-owned nuclear materials expected to be disposed of by DOE in a licensed geologic repository. These were established in an attempt to ensure compliance with applicable statutes and regulations including Nuclear Regulatory Commission (NRC) requirements contained in Title 10, Code of Federal Regulations, Part 60 (10

CFR 60) for the "Disposal of High-Level Radioactive Wastes in Geologic Repositories." The DOE Office of Environmental Management (EM) developed the "Waste Acceptance Product Specification" (WAPS) to meet specific OCRWM acceptance requirements for high-level waste (HLW), and support the treatment of HLW in parallel with separate efforts aimed at determining the suitability of the Yucca Mountain site for a geologic repository. These criteria will continue to be refined, as more is understood about long-term disposal, and as regulations are updated. The NRC is updating 10 CFR 60 to 10 CFR 63, and there are no expected changes in the proposed waste acceptance criteria concerning HLW. The NRC will not evaluate the acceptability of HLW products, but rather will issue a license based on the ability of the repository to safely contain HLW and spent nuclear fuel from the accessible environment. DOE plans to submit a license application for a geologic repository in 2002.

OCRWM works with the NRC, and EM works closely with OCRWM on the development of the waste acceptance criteria contained in the WAPS. The WAPS are specified for the vitrified HLW being produced by the Defense Waste Processing Facility at the Savannah River Site and the West Valley Demonstration Project. The Department initiated radioactive operations at these two sites, in order to place the waste in a safer, more stable vitrified form, recognizing that there was some programmatic risk in beginning to produce HLW canisters without final acceptance requirements. However, the risk is minimal because these vitrified products meet the WAPS waste acceptance criteria, and DOE believes that they can be safely disposed of in a repository licensed under NRC repository disposal requirements. For the same reasons, the WAPS are specified for vitrification of the Hanford HLW.

Question. In 1997, and for two years following, Congress requested the Department to invest in a promising technology that would vitrify waste in its final storage container, thereby offering a potential alternative technology for nonhomogeneous tank wastes at Government facilities. What is the status of DOE's investigation into this technology? Does DOE have plans for its further development?

Answer. Through fiscal year 1999, the Department has provided a total of $3.3 million to support the development of an Advanced Vitrification System (AVS). Under the terms of the contract with the AVS developer, Radioactive Isolation Consortium, the Department conducted a technical and programmatic review in October 1999 to determine if AVS had met all of the technical criteria required to proceed to an advanced development phase of the project, which would have included the construction of a pilot facility. Based on the research and development conducted by the developer, the review panel concluded that the AVS did not meet the technical criteria needed to move to the next phase of development.

However, given the inherent complexities associated with treating high-level waste and the consequent life cycle cost, the Department is working expeditiously to consider viable technology options to address the treatment of high-level waste at Hanford and other sites. In view of the initial AVS review, which found the process to have merit, the Department has decided to structure continued work on the AVS technology in a manner that addresses the identified technical weaknesses and supports additional bench-scale tests during fiscal year 2000.

Question. Is DOE aware of a recent National Academy of Science report entitled "Alternative High-Level Waste Treatment at the Idaho National Engineering and Environmental Laboratory" in which a single use melter concept is described as having advantages over continuous single melters? What is DOE's view of the single use melt-in-final-disposal container development program? Should it be extended to cover the Idaho (INEEL) high level waste?

Answer. Yes, we are aware of the National Academy of Sciences (NAS) report, which covers many of the options for treatment and production of various waste forms for the Idaho National Engineering and Environmental Laboratory (INEEL) high-level waste. The single-use melter concept is one among several alternatives that are candidates. As the report states, "the committee concluded that, in short, not enough information is available to make a sensible choice among technical alternatives." DOE's view is to technically review the many options available, including the Advanced Vitrification System under development by the Radioactive Isolation Consortium, on a comparable basis to determine the course of developments best applicable to future Hanford applications as well as INEEL. We currently expect to complete this review by the end of the fiscal year. In addition, the Department is preparing an Environmental Impact Statement (EIS) on the INEEL high-level waste that evaluates various technologies and programmatic alternatives; this EIS will lead to a Record of Decision (ROD) late this calendar year that will document the path forward for high-level waste disposition at INEEL. The results of this review, the NAS report, and the final EIS and ROD will provide a basis for future funding and development of melters and waste forms.

QUESTIONS SUBMITTED BY SENATOR SLADE GORTON

HANFORD TANKS

Question. The Department's most compelling environmental need is the cleanup of the high-level waste tanks at Hanford. These tanks are well beyond their expected lifetime and many have already leaked. Plumes of radioactive contamination are slowly moving toward the Columbia River—the very lifeblood of my region.

The Department is obligated through a legally enforceable consent decree negotiated with the state of Washington to adhere to a clearly understood schedule for the removal of the wastes from these tanks and for their vitrification into a form suitable for ultimate disposal. But negotiations to revise this Tri-Party Agreement recently broke down and environmental regulators with the state and regional EPA office recently imposed deadlines to keep DOE on track for building the vitrification and treatment facilities.

What are the Department's plans to resolve this Tri-Party Agreement dispute and to maintain the schedule for stabilizing and cleaning up the high-level waste in the Hanford tanks?

Answer. On May 10, 2000, following a meeting with Washington Governor Gary Locke and Attorney General Christine Gregoire, Secretary Richardson announced new commitments to the State of Washington. They include amending an existing consent decree to include two new milestones for selecting a new Hanford high-level waste treatment design and construction contractor, attempting to negotiate a new consent decree to establish commitments aligned to the new contract, committing to no shipments of waste to Hanford from new sources while the Department works to get the new contract on firm footing, discussing with the State longer term commitments on shipment of waste into the State, and engaging the Department, the State and the U.S. Environmental Protection Agency in a discussion on realigning Hanford cleanup commitments to ensure they are achievable and address the most important problems first.

Question. Specifically, how does the Secretary plan to address the concerns of Governor Locke and others that my state should not be asked to accept shipments of additional DOE low-level and mixed radioactive waste for disposal at Hanford until we have an absolute commitment that the Department will maintain the schedule for cleaning up the high-level waste in the Hanford tanks?

Answer. On May 10, 2000, following a meeting with Washington Governor Gary Locke and Attorney General Christine Gregoire, Secretary Richardson announced new commitments to the State of Washington. They include amending an existing consent decree to include two new milestones for selecting a new Hanford high-level waste treatment design and construction contractor, attempting to negotiate a new consent decree to establish commitments aligned to the new contract, committing to no shipments of waste to Hanford from new sources while the Department works to get the new contract on firm footing, discussing with the State longer term commitments on shipment of waste into the State, and engaging the Department, the State and the U.S. Environmental Protection Agency in a discussion on realigning Hanford cleanup commitments to ensure they are achievable and address the most important problems first.

Question. Please describe the Department's commitment to proceed with the privatization project for vitrifying the high-level waste in the Hanford tanks.

Answer. The Department is strongly committed to treating the wastes in the tanks at Hanford for subsequent permanent disposal using the most cost-effective contracting mechanism. The Secretary's May 8 announcement maintains this commitment, but through a different acquisition strategy.

Question. Will the use of a privatization contractor for the Hanford tank waste vitrification be more cost-effective to the taxpayer than use of traditional DOE management and operations contractor?

Answer. The Department determined that British Nuclear Fuels Limited, Inc.'s (BNFL) April 24, 2000, cost proposal for the Hanford privatization contract was unacceptable in many areas, including cost, schedule, management, and business approach. Therefore, on May 8, 2000, the Secretary announced that the privatization contract with BNFL will be terminated. The Department will compete a design and construction contract, with a new contractor being selected by January 15, 2001. Near-term operating responsibility will be transitioned to an existing contractor, and later the Department will solicit competitive bids for operation of the completed facility.

QUESTIONS SUBMITTED BY SENATOR LARRY CRAIG

STATUS OF LITIGATION

Question. What is the status of the utility lawsuits against DOE for failure to begin removing spent nuclear fuel from reactor sites in 1998?

Answer. Several utilities have sued DOE for breach of contract in the Court of Federal Claims. However, those cases are stayed pending resolution of special appeals to the Federal Circuit on the issue of whether the utilities first must exhaust administrative remedies and file claims with the Department. DOE believes the proper forum is with DOE's contracting officer. Oral arguments in the special appeals were heard on May 3, 2000.

RADIATION PROTECTION STANDARDS

Question. Prior to your confirmation, you and I had a private discussion about the need for some common sense in setting a radiation standard for the proposed repository at Yucca Mountain. The EPA has proposed 15 millirem, with 4 millirem allocated for groundwater. The Nuclear Regulatory Commission has proposed 25 millirem as fully protective of public health and safety. You committed to look into this matter. What have you concluded regarding the radiation standard?

Answer. The NRC's proposed licensing requirements for Yucca Mountain differ in two important respects from the standards in EPA's proposed rule. First, NRC proposes an all-pathways individual dose limit of 25 mrem per year, consistent with standards applicable to commercial nuclear facilities, and as opposed to the 15 mrem all-pathways per year limit proposed by EPA. More importantly, NRC does not include separate groundwater protection requirements.

EPA's proposed 15 mrem/year all-pathways individual protection standard is extremely rigorous. The Department believes a 25 mrem/year all-pathways standard is more reasonable and fully adequate as the generally applicable standard for all nuclear facilities.

The Department is particularly concerned with the proposed groundwater standard. While the Department supports the general goal of protecting individuals from exposures through any potential pathway, including groundwater, the proposed groundwater standard is redundant and unnecessary for the protection of public health and safety because the all-pathways standard adequately protects human health and safety without the need for another standard.

The Department has provided comments to EPA on the issues discussed above and urged the adoption of a 25 mrem/year standard, which, if adopted, would result in a stringent but implementable rule, and would provide appropriate protection of the public and the environment. If EPA were to select unrealistic or unnecessarily conservative standards, the result could be the rejection of an otherwise suitable site, and the de facto rejection of the geologic disposal option without commensurate benefit to the protection of public health and safety. Such rejection would not avoid the consequences of radioactive waste management, but it would require society to resort to a different and currently undefined approach.

QUESTION SUBMITTED BY SENATOR ROBERT C. BYRD

DEACTIVATION AND DECOMMISSIONING PROGRAM FUNDING

Question. The National Energy Technology Laboratory located in Morgantown, West Virginia, and Pittsburgh, Pennsylvania, administers nearly half of the Department of Energy's Deactivation and Decommissioning focus area, which seeks to promote the rapid deployment of better technologies to treat, stabilize, and dispose of nuclear waste at Department of Energy sites across the nation; reduce risks to site workers, the public, and the environment; and to provide a practical approach for testing a technology's capabilities. I understand that the DOE's deactivation and decommissioning backlog is currently estimated at $33 billion. I am further advised that one-third of all technologies deployed by the EM science and technology program have been in the D&D focus area. Despite successes of the Deactivation and Decommissioning focus area thus far and its potential to continue to help address the nation's $33 billion clean-up backlog, the D&D science and technology funding been cut from $27 million in fiscal year 2000 to $18 million in fiscal year 2001, which constitutes a 33 percent cut.

Should not the program be increased, rather than reduced, in view of the savings that even a small increase in efficiency in cleanup operations could yield? My figures indicate that if the Deactivation and Decommissioning program could stimulate

a mere 3 percent in efficiency in the $33 billion cleanup effort, the taxpayers could save nearly a billion dollars. Why is the program being cut instead of increased?

Answer. In developing its fiscal year 2001 budget request, the Department had to make a number of tough decisions among the competing demands for funding. One resulted in a slight reduction ($9.1 million) in the Science and Technology budget request. Similarly, there are also competing science and technology needs. Our Science and Technology investments are planned and managed in conjunction with EM's cleanup project managers and stakeholders. The allocation of funding among our Science and Technology activities is done based on needs that have been identified by cleanup project managers and ranked using a national multi-attribute prioritization system. This process takes into consideration major cleanup cost drivers, technology deployment, site needs, and technical risk.

Based on our total budget request for Science and Technology and competing priority needs, such as the high-level tank waste and nuclear material technology areas, we consider $18.4 million an appropriate level for deactivation and decommissioning activities.

CONCLUSION OF HEARINGS

Senator CRAIG. Thank you very much. And the subcommittee will stand recessed.

[Whereupon, at 12 noon, Tuesday, April 11, the subcommittee was recessed, to reconvene subject to the call of the Chair.]

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2001

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

NONDEPARTMENTAL WITNESSES

[CLERK'S NOTE.—At the direction of the subcommittee chairman, the following statements received by the subcommittee are made part of the hearing record on the Fiscal Year 2001 Energy and Water Development Appropriations Act.]

CALIFORNIA NAVIGATION AND RELATED PROJECTS

PREPARED STATEMENT OF THE PORT OF STOCKTON

Mr. Chairman: I am LeRoy F. Hieber, Port Director of the Port of Stockton in Stockton, California.

The San Francisco Bay to Stockton Ship Channels Project is an authorized project.

The Port of Stockton is primarily a bulk port that serves industry and agriculture in the San Joaquin Valley in California, and the bulk imports and exports of the Western States.

The Port of Stockton recognized as far back as 1952 that deeper channels would be needed for the movements of bulk cargoes and requested the Corps of Engineers to deepen the channel in 1952. Coal, grain, fertilizers and many other bulk materials require deeper channels to serve the larger bulk carriers.

The Nation needs ports that can handle larger, more economical and more fuel-efficient vessels close to the production areas, both agricultural and industrial.

The Port of Stockton is such a port.

The dredging of the Stockton Channel portion of the project to thirty-five feet was completed in 1987. A copy of the Port of Stockton's most recent annual report is attached. Cargo volume has increased since the dredging of the Stockton Channel was completed; and the project is certainly paying off.

Therefore, we requested the Corps of Engineers for a new navigation study (reconnaissance study) to deepen the Channel further, to forty feet or more, if economically feasible. The funding for this study was appropriated in fiscal year 1998. The reconnaissance study determined that there is a Federal interest in further deepening the Channel.

For the 2001 fiscal year, we are requesting $300,000 for the feasibility study. Because this study has to be coordinated for proper timing with the U.S. Navy's project to deepen the Channels to the Concord Weapons Station, this study needs to be done now. The feasibility study is fifty percent cost-shared.

The President's proposed 2001 budget only contains $150,000 for the feasibility study, but the feasibility study and the eventual construction, needs to be closely tied to the deepening of the Channel through San Pablo Bay, and this project needs to be timed appropriately with that construction. Deferring $150,000 now could cost millions in extra cost later.

The President's proposed 2001 budget includes $2,028,000 for maintenance. This is insufficient. Every time insufficient funds are provided for complete maintenance, and the maintenance dredging, therefore, cannot be completed at one time, an additional mobilization and de-mobilization cost of between $500,000 and $1 million is incurred when it is completed. $3 million is required for an average, complete main-

tenance dredging job. Appropriating less than $3 million results in extra mobilization and de-mobilization cost between $500,000 and $1 million each time each additional maintenance job, which increases the cost by thirty percent to sixty percent, not counting staff time, testing cost, permitting cost, et cetera. It could very well double the actual cost.

We urge you to appropriate $300,000 for the Stockton Deep Water Channel Feasibility Study. We also strongly urge that $3 million be appropriated to maintain the Channels so that the present benefits also may continue to accrue, and to avoid the additional cost incurred when insufficient funds are provided to complete the required maintenance at one time.

PREPARED STATEMENT OF THE PORT OF LONG BEACH

I am E. D. Allen, Chief Harbor Engineer for the Port of Long Beach, California. The Port of Long Beach is this nation's largest container port. I have been authorized by the Board of Harbor Commissioners of the City of Long Beach to represent the Port of Long Beach in regard to fiscal year 2001 appropriations for the Los Angeles and Long Beach Harbors Model Study and Wave Data Collection Program; Los Angeles River maintenance dredging; Feasibility Studies for beach erosion; assessment study of LA Ocean Disposal Site 3; and Reconnaissance and Feasibility Studies for Contaminated Sediment Disposal.

My more specific requests follow for listed projects.

Harbors Model Maintenance (Civil Works Budget Category—O&M)

The Water Resources Development Act of 1976, Section 123, authorized the Chief of Engineers to operate and maintain the Los Angeles-Long Beach Harbor Hydraulic Model at the U.S. Army Corps of Engineers Waterways Experiment Station in Vicksburg, Mississippi as part of the Los Angeles and Long Beach Harbors Model Study. This model encompasses both port complexes in San Pedro Bay, which, as the third largest container port complex in the world, are ports of national strategic and defense significance. The hydraulic model, along with several numeric models, provide state-of-the-art methodology that can be used to provide operational improvements to the San Pedro Bay ports and many other harbor complexes. In addition, the Port, as the local agency, is assisting in the Corps effort to provide collection of continuous wave-gauge data by providing necessary support personnel and equipment for the maintenance of portions of the systems located at the Port.

In fiscal year 2000, $165,000 was appropriated for maintenance of the physical model of San Pedro Bay. Recently, the Port used the model to analyze necessary navigation-related modifications to our upcoming port expansion and validate numerical model results. This effort is being funded by the Port and is on-going. It is necessary that the model remain ready for service such as this. Funding in fiscal year 2001, in the amount of $170,000, would continue annual maintenance on the model. Additionally, we are requesting $335,000 in continued funding for the wave gauge (prototype) data acquisition and analysis program. The wave data gathering program is essential as it provides real-world information to compare to model performance. The wave data acquisition program began in 1987 to provide validation of the design of the 2020 Plan, our Master Plan for port expansion and navigation improvements. This program has now evolved to construction monitoring and model verification which needs to continue to confirm expected levels of impacts of the expansion plans. The shipping industry's increasingly larger vessel size continues to challenge port engineers. The need for modeling and wave gauge data acquisition continues to be a critical tool supporting the ports ability to create facilities compatible with changing trade conditions and operations. As a local agency, we are funding a new numerical modeling effort in the amount of $755,000 and this effort by us requires wave gauge data for verification. In summary, Congress is respectfully requested to appropriate $505,000 for fiscal year 2001 to perform this needed model data acquisition work.

Los Angeles River Maintenance Dredging (Civil Works Budget Category—O&M)

The Port of Long Beach also concurs with and supports the recommendation of C–MANC and the City of Long Beach to federal fund remedial maintenance dredging to remove accumulated flood-deposited silt in the mouth of the Los Angeles River. During the storms of 1995, flood-deposited silt closed the mouth of the Los Angeles River to navigation. This restricted regularly scheduled water route transportation between the cities of Long Beach and Avalon, creating an economic emergency. Reacting to this, the U. S. Army Corps of Engineers removed 300,000 cubic yards from the channel which allowed for minimal resumption of navigation.

On a yearly basis substantial quantities of silt accumulate and remain in the channel. These silt deposits create the likelihood of future serious restrictions and safety hazards to commercial and recreational boating activity in, and adjacent to, the Long Beach Harbor District and the associated businesses in Long Beach. Such restrictions and hazards have resulted in prior accidents and litigation against the City and Federal Government.

The Port supports the City in recommending that these silt deposits be removed on an annual basis as a scheduled work item. In the draft of "Project Plan for Los Angeles River Estuary Maintenance Dredging, Long Beach, CA, October 1994" (Draft Project Plan–1994), the Corps of Engineers estimated an average annual deposit of silt in the estuary of 485,000 cubic yards. It is imperative for current operations, that a long range remedy be found for the Los Angeles River mouth, if navigational utility and effective flood control capability is to be maintained.

It is estimated by the Corps of Engineers, that maintenance dredging of the channel to a minimum usable width requires removal of approximately 185,000 cubic yards at an annual cost of over $2,000,000.

Since work has not been annually done, Congress is therefore requested, to appropriate $3,800,000 for silt removal. This work is included in the line item known as Los Angeles Long Beach Harbors in the Civil Works Budget.

LA–3 Site Designation Study (Civil Works Budget Category—General Investigation)

The Corps of Engineers and U.S. Environmental Protection Agency initiated a study in fiscal year 1999 to permanently designate an Ocean Disposal Site (referred to as LA–3) in the deep waters offshore of Newport Beach. As the LA–3 study progressed, it was concluded that the annual capacity of a currently designated Ocean Disposal site referred to as LA–2 offshore of the Port of Long Beach and the Port of Los Angeles needed to be reassessed for potential expansion. We believe that the reassessment of LA–2's annual capacity could best be accomplished by combining this effort into the LA–3 study. LA–2 has historically played a vital role in the economic expansion of both the Port's of Long Beach and Los Angeles by providing a receiving site for material dredged to deepen our navigation channels. Expanding the capacity of LA–2 would ensure the continuation of our economic vitality. Therefore, we request the Federal funds in the amount of $1,000,000 be applied to the LA–3 Ocean Disposal Site Study in fiscal year 2001 to allow this study to incorporate the LA–2 annual capacity reassessment work effort and to continue the site designation work effort for LA–3.

Los Angeles County Regional Dredge Management Plan (Civil Works Budget Category—General Investigations)

The Contaminated Sediment Task Force, of which the Los Angeles District of the U.S. Army Corps of Engineers is a key member, is charged with investigating the major issues involved in formulating and implementing a regional contaminated sediment management strategy including four major issues:

—*Upland Disposal*.—Blending of contaminated sediments with clean sediment to make structural fill as a promising disposal option. However, there is no quantitative data on proportions, handling methods, and desired end products that would support management decisions on disposal/reuse options. There is great need to undertake a pilot handling project to collect that information.

—*Screening Guidelines*.—Quantitative sediment chemistry guidelines are required to screen sediments for aquatic disposal and necessitate gathering historical regional data on sediment chemistry, toxicity, and bio-accumulation to be analyzed for region-specific relationships between sediment chemistry and toxicity.

—*Watershed Management*.—Control of future contamination via land runoff as a key management issue. Field and modeling study of sediment and contaminant transport in the Los Angeles region are required both to build on existing watershed efforts and to acquire specific data on the movement of contaminants into harbors.

—*Aquatic Disposal*.—A regional confined aquatic disposal facility is a promising management tool which provides a multi-user site active over a period of many years. The approach requires an engineering feasibility study of such issues as: quantifying the containment disposal capability, the interface chemistry between sediments of multiple users, and determining best management practices.

The program would be managed by the Los Angeles District and requires $400,000 in Federal funding; substantial additional funding would come from State and local sources. Congress is therefore requested to appropriate $400,000 in fiscal year 2001 to support the Contaminated Sediment Task Force in their effort to continue development of a Los Angeles County Regional Dredge Management Plan.

Feasibility Study Beach Erosion (Civil Works Budget Category—General Investigations)

The Port of Long Beach also supports C–MANC and the City of Long Beach on their request for federal funding to initiate a Corps of Engineers feasibility study on beach erosion. This beach erosion problem is directly related to the focusing affect the federal breakwater has on our large commercial harbor complex and surrounding beaches. In southeastern Long Beach, east of the Port's land and channels, and directly effected by openings in the federal breakwater, a beach and seawall protects approximately $200,000,000 worth of homes based on the 1990 U.S. census. We expect the current home value to be significantly higher. Steady erosion constantly reduces the beach from an optimum of 175 feet to as little as 50 feet when in late 1994 the City was forced to rebuild the beach. Winter storms continue to reduce the beach width.

The City has also experienced erosion in the west beach area. Although homes are not endangered, public improvements, including lifeguard stations, public restrooms, a bicycle and pedestrian trail, and a parking lot, are at risk. The cause of the new problem is unclear, indicating the need for a thorough study of the beach erosion problem inside the federal breakwater.

The primary method of protecting the homes has been annual rebuilding of sand berms during high tides or expected storms. The City has invested over $5,500,000 in capital improvement projects, annual beach rebuilding, and storm protection to control the beach erosion over the past 17 years. Despite this effort, in 1989 and 1993, storm waves eroded the beach and breached the protective seawall, causing damage to homes. The City is also defending itself against a lawsuit by one of the homeowners who is claiming that the City failed to halt erosion that narrowed the beaches in front of his home to less than the desired width adopted in the 1980 Local Coastal Plan.

In fiscal year 1997, $252,000 was appropriated to complete the reconnaissance study of the beach erosion problem within the City of Long Beach. It is now requested that Congress appropriate $500,000 in fiscal year 2001 to initiate the follow-up feasibility study.

Attached hereto is a Resolution that was adopted by the Board of Harbor Commissioners of the City of Long Beach on February 28, 2000, which contains data relating to the background of the Los Angeles and Long Beach Harbors Model Study, the Los Angeles River dredging, LA–3 Site Designation Study, the Los Angeles Count Regional Dredge Management Plan, the beach erosion problem in Long Beach, and other related navigation and economic matters. The resolution stresses the need for federal assistance in developing economic, technical and environmental background information essential to the design and permitting of Port facilities vital to regional and national interests. The Port of Long Beach is the largest container port in the United States and is an integral part of an economic engine bringing $3.7 billion annually in customs receipts into the Federal Treasury and has generated approximately 500,000 jobs locally, regionally and nationally. We are truly a port and harbor of national significance.

We kindly ask that Congress continue its support of these projects in fiscal year 2001 by appropriating the requested funds.

Thank you for permitting me the privilege of this testimony.

RESOLUTION NO. HD–2002

A RESOLUTION OF THE BOARD OF HARBOR COMMISSIONERS OF THE CITY OF LONG BEACH, CALIFORNIA, REQUESTING THE CONGRESS OF THE UNITED STATES TO APPROPRIATE FUNDS TO THE UNITED STATES ARMY CORPS OF ENGINEERS IN ORDER TO CONTINUE THE LOS ANGELES AND LONG BEACH HARBORS MODEL STUDY RELATING TO IMPROVEMENTS IN SAN PEDRO BAY, TO CONDUCT MAINTENANCE DREDGING AT THE MOUTH OF THE LOS ANGELES RIVER, TO EXPAND THE LA–3 SITE DESIGNATION STUDY, TO CONDUCT FEASIBILITY STUDIES OF BEACH EROSION, AND TO CONTINUE THE LOS ANGELES COUNTY REGIONAL DREDGE MANAGEMENT PLAN

WHEREAS, the Ports of Long Beach and Los Angeles in San Pedro Bay, California, are two of a limited number of sites on the West Coast of the United States which possess the potential for deep water port facilities as recommended in the West Coast Deep Water Port Facility Study conducted by the United States Army Corps of Engineers; and

WHEREAS, the Ports of Long Beach and Los Angeles have a record of both physical and fiscal growth to the extent that together the two ports are presently handling over 200 million metric revenue tons including 8.2 million twenty-foot equiva-

lent units of container cargo annually (calendar year 1999), and the international cargo handled is valued at over $160 billion annually (calendar year 1998); and

WHEREAS, the growth and activity of the Ports of Long Beach and Los Angeles have a significant regional and national economic effect; and

WHEREAS, in 1998 the Los Angeles Customs District remained the Nation's top entry and exit point for international cargo, valued at over $181 billion, generating approximately $3.7 billion in Federal revenues collected as United States Customs duties, approximately 85 percent of which is generated by the Long Beach and Los Angeles Ports; and

WHEREAS, both Ports are now, and are increasingly becoming, hard-pressed to provide facilities to meet the needs of the shipping industry, and to that end are conducting extensive studies, in conjunction with federal studies, to determine navigational, transportation, and environmental requirements necessary to provide economic and adequate surge-free berthing and cargo handling facilities; and

WHEREAS, all existing land in the Port of Long Beach which can be developed for shipping operations has been utilized or is in the process of being developed and, in order to meet the needs of the following decade, the design, permitting and construction of new lands must continue; and

WHEREAS, continuation of the studies currently underway by the United States Army Corps of Engineers, consisting of the Los Angeles and Long Beach Harbors Model Study, including maintenance and operation of the San Pedro Bay Hydraulic Model at Vicksburg, Mississippi, as authorized by Section 123 of the Water Resources Development Act of 1976, is needed for use in the design and permitting processes for future landfills for port development; and

WHEREAS, the Los Angeles River is the largest of numerous flood-control channels constructed and maintained jointly by the Los Angeles County Flood Control District and the United States Army Corps of Engineers, and silt deposit from storm runoff accumulating in the mouth of the Los Angeles River in the City of Long Beach constitutes a restriction and hazard to both commercial and recreational boating; and

WHEREAS, the Southern California region has a significant volume of contaminated sediments from area runoff and other activities and the Los Angeles District of the U.S. Army Corps of Engineers is a key member of a Task Force charged with the investigation of major issues involved in formulating and implementing a Los Angeles County Regional Dredge Management Plan; and

WHEREAS, at southeastern Long Beach in front of Alamitos Bay a beach and seawall protects $200 million worth of homes (1990 U.S. census data). The primary method of protecting the homes has been annual beach rebuilding and sand berms during storms. Steady erosion has reduced the beach from optimum width of 175 feet to as little as 50 feet and continues to reduce beach width despite rebuilding efforts in 1994. The City has invested over $5.5 million in capital improvement projects, annual beach rebuilding, and storm protection to control the beach erosion over the past 17 years. Despite this effort, in 1989 and 1993, storm waves eroded the beach and breached the protective seawall causing damage to homes; and

WHEREAS, the Board of Harbor Commissioners of the City of Long Beach, as a properly constituted and financially responsible local agency, by its Resolution No. HD–890, adopted August 3, 1965, expressed its intent to enter into such agreements as may be reasonably required to further federal projects for the development and improvement of Long Beach and Los Angeles Harbors.

NOW, THEREFORE, the Board of Harbor Commissioners of the City of Long Beach resolves as follows:

Section 1. That the Congress of the United States be, and is hereby, respectfully requested to appropriate simultaneously the funds necessary for the Chief of Engineers, United States Army Corps of Engineers, to maintain the San Pedro Bay Hydraulic Model at the Waterways Experiment Station at Vicksburg, Mississippi, as part of the Los Angeles and Long Beach Harbors Model Study.

Sec. 2. That the Congress of the United States be, and is hereby, respectfully requested to appropriate simultaneously the funds necessary for the Chief of Engineers, United States Army Corps of Engineers, to continue the existing wave gauge (prototype) data acquisition and analysis program.

Sec. 3. That the Congress of the United States be, and is hereby, respectfully requested to appropriate simultaneously the funds necessary for the Chief of Engineers, United States Army Corps of Engineers, in conjunction with the Los Angeles County Flood Control District, to engage in the necessary maintenance dredging at the mouth of the Los Angeles River to remove silt deposits which have accumulated at that location.

Sec. 4. That the Congress of the United States be, and is hereby, respectfully requested to support the Chief of Engineers, United States Army Corps of Engineers,

to reassess dredge Ocean Disposal Site LA–2 when conducting LA–3 Site Designation Study.

Sec. 5. That the Congress of the United States be, and is hereby, respectfully requested to appropriate simultaneously the funds necessary for the Chief of Engineers, United States Army Corps of Engineers, to complete feasibility studies to develop and implement a Los Angeles County Regional Dredge Management Plan for Southern California.

Sec. 6. That the Congress of the United States be, and is hereby, respectfully requested to appropriate simultaneously the funds necessary for the Chief of Engineers, United States Army Corps of Engineers, to complete feasibility studies to develop protective measures to prevent beach erosion within the City of Long Beach.

Sec. 7. That the Executive Director of the Long Beach Harbor Department be, and he is hereby, directed to send copies of this resolution to the United States Senators and to Members of the House of Representatives from California, with a letter requesting their assistance in presenting this resolution before the proper Congressional committees.

Sec. 8. That the Executive Director of the Long Beach Harbor Department be, and he is hereby, further directed to send copies of this resolution to the President of the United States; the Director, Office of Management and Budget; the Secretary of the Army; the Chief of Engineers, the Director, Directorate of Civil Works, the Division Engineer-South Pacific Division and the District Engineer-Los Angeles, all of the United States Army Corps of Engineers; and to such other interested persons as he may deem appropriate.

Sec. 9. The Secretary of the Board shall certify to the passage of this resolution by the Board of Harbor Commissioners of the City of Long Beach, shall cause the same to be posted in three (3) conspicuous places in the City of Long Beach, and shall cause a certified copy of this resolution to be filed forthwith with the City Clerk of the City of Long Beach and it shall thereupon take effect.

I hereby certify that the foregoing resolution was adopted by the Board of Harbor Commissioners of the City of Long Beach at its meeting of February 28, 2000 by the following vote:

Ayes: Commissioners—Calhoun, Hancock, Peres, Kashiwabara, Hearrean
Noes: Commissioners—None
Absent: Commissioners—None
Not Voting: Commissioners—None

CARMEN O. PEREZ,
Secretary.

PREPARED STATEMENT OF THE SACRAMENTO AREA FLOOD CONTROL AGENCY

Dear Mr. Chairman and Members of the Subcommittee: We appreciate the opportunity to provide testimony to this Subcommittee, and extend our sincere appreciation for your past support of this community's efforts to protect the citizens and properties in the Capital City of California. In our continuing efforts to protect the Sacramento Metropolitan Area, the Sacramento Area Flood Control Agency (SAFCA), and its member agencies, support the following Federal appropriations for fiscal year 2001:

[In millions of dollars]

Project	FY 2001 Admin. Request	FY 2001 SAFCA Request
Folsom Modifications: Modifications to Folsom Dam to provide greater efficiency in managing flood storage in Folsom Reservoir. NEW START	[1] 5.0	[1] 12.0
South Sacramento Streams: Prevention of flooding of portions of Sacramento from the south, where four creeks convey foothill runoff through urbanized areas into Beach Lake and the Delta. NEW START	[2] 0.2	[1] 5.0
American River Common Elements: 24 miles of levee improvements along the American River and 12 miles of improvements along the Sacramento River levees, flood gauges upstream of Folsom Dam, and improvements to the flood warning system along the lower American River. Request includes $1.0 million to begin work on levee parity, authorized in WRDA 1999	[1] 10.0	[1] 13.0
Sacramento River Bank Protection: Will correct harmful erosion along the banks of the American River that threatens the integrity of the existing levees	[1] 3.3	[1] 5.0

[In millions of dollars]

Project	FY 2001 Admin. Request	FY 2001 SAFCA Request
American River Watershed (Natomas): Reimbursement to SAFCA for the Federal share of the flood control improvements undertaken by the local project sponsor	.....	[1] 5.0
American River Plan: Funds to continue previously authorized planning and design of Sacramento flood protection projects	[2] 3.285	[2] 5.0
Lower Strong & Chicken Ranch Sloughs (DO5 Pump Station): a feasibility study to restore 100-year level of flood protection to Chicken Ranch Slough drainage to the American River. This area has flooded four times since 1986	[3] 0.15	[3] 0.5
Magpie Creek: Authorized under the Corps= Section 205 Program, this project will provide a high degree of flood protection on Magpie Creek. McClellan AFB	[4] N/A	[1] 2.5 [3] 0.5
Total	21.935	48.5

[1] Construction.
[2] Preconstruction Engineering and Design.
[3] Surveys.
[4] The Corps has requested $25.0 million for the Section 205 Program, which funds these two projects. Individual projects are not itemized in this request.

Sacramento continues to have the ignoble distinction of being the urban area with the lowest flood protection in the nation according to the U.S. Army Corps of Engineers (Corps). Addressing this problem is our region's most critical infrastructure issue as evidenced by the formation of a joint powers agency, the Sacramento Area Flood Control Agency (SAFCA) to solve the problem and the millions of dollars spent over the past ten years on improvements and countless engineering studies. A major flood on the American River would cause between $7 and $16 billion in damage and likely result in lives being lost. The floodplain is home to over 400,000 residents, 150,000 homes, 5,000 businesses, the State Capitol, and 1,300 government facilities.

As part of the 1999 water Resources Development Act (WRDA), Congress authorized the most significant set of flood control improvements since Folsom Dam was constructed in 1955. While these improvements do not meet SAFCA's long term goal of providing 200-year flood protection, they will raise the minimum level of protection from about 85-year to 140-year and provide a foundation for additional improvements that will reach our goal. All interests from engineers to environmentalists; small businesses to corporations; community activists to the local homeowner agree Sacramento needs to move forward with these improvements as rapidly as possible. The five largest floods on the American River this century have all occurred since 1950. The last two floods, 1986 and 1997 were the largest ever recorded. When a new record flood occurs, and there is about 1 chance in 3 it will occur in the next 30 years, it will likely produce the worst flood disaster in this nation's history unless these improvements are complete. We hope you can understand our desire for appropriation levels that will allow the projects to proceed forward in an aggressive time frame.

Sacramento has not been sitting idly since our near disaster in 1986. Over $90.0 million in local funds have been spent on flood control improvements, engineering studies, public education and other activities to further our region's flood control objectives. We have been a very proactive and innovative community. Accomplishments to date include strengthening levees along the Sacramento River; raising and constructing new levees in North Sacramento and Natomas; raising levees protecting the Regional Wastewater Treatment Plant; negotiating an agreement for more flood space at Folsom; restoring bank erosion sites along the Lower American River; and development of a flood management plan including evacuation plans and development guidelines. The flood control improvements to our system played an important role in avoiding the devastating flood damages experienced by our neighbors to the north and south during the past few years. In addition, we have worked closely and cooperatively with the Corps and the State of California in systematically re-evaluating the flood control system protecting this region and identifying the projects necessary to significantly reduce our chances of a catastrophic flood. That work led to the 1999 WRDA authorizations and to the specific appropriations request summarized earlier and described in more detail below.

Folsom Dam Modifications.—Folsom Dam was originally designed in the 1950s to provide a very high level of flood protection (250 to 300-year). However, five major floods since the project was completed have caused the Corps to conclude that the level of flood protection actually provided is less than 100-year. This is substantially less than other similarly situated major urban areas around the nation including St. Louis, Kansas City, Dallas, Omaha, Minneapolis, and Pittsburgh.

Following unsuccessful efforts to obtain authorization of a new flood control structure at Auburn in 1992 and 1996, the Corps, the State and SAFCA have focused their attention on identifying improvements to Folsom Dam and other existing flood control features that will cost effectively increase flood protection. As a result of these efforts, Congress authorized flood control improvements in 1992, 1996 and again in 1999.

The most recent improvements are to the outlet works at Folsom Dam which represent the most important steps for improving public safety in Sacramento. We believe the extreme existing risk and the consequences of a flood clearly justify an aggressive schedule. The Administration has included a new start and $5.0 million in its proposed budget for this project. This amount is predicated on a very relaxed schedule that assumes the Corps will not begin to prepare a Project Cooperative Agreement (PCA) until they have completed a decision document setting forth their decision on design details. SAFCA is asking that Congress direct the Corps to prepare the PCA in the most expeditious manner possible, and believes that this direction will allow the Corps to begin construction of this project three months sooner. With the earlier start of construction, more funds are needed, and SAFCA is requesting that the appropriation for this project be increased to $12.0 million.

South Sacramento Streams Group Project.—In 1995, homes in the South Sacramento area were threatened by rain swollen creeks which reached to within a foot, and in some areas less, of overtopping the levees and channels and flooding adjacent residential subdivisions. The Corps 1998 feasibility study concluded much of the urban area of South Sacramento has less than 50-year flood protection from these urban streams. There are over 100,000 people and 41,000 structures in the floodplain of Morrison, Unionhouse, Florin and Elder Creeks that make up the South Sacramento Streams Group Project. Congress authorized the NED plan recommended by the Corps as part of the 1999 WRDA. The Administration's budget however includes only $0.2 million for continuing preliminary engineering and design (PED) based on an erroneous assumption that considerably more preconstruction design work needs to be done. In fact, we will be ready to begin construction early in fiscal year 2001 and SAFCA respectfully requests that this project be designated for a new start, with an initial appropriation of $5.0 million. This will allow the Corps to move to construction of this project on an optimum schedule, thereby providing the citizens of South Sacramento with improved flood protection at least a year sooner than the Administration's proposal.

American River Common Elements Project.—As part of the 1996 WRDA, Congress authorized flood control features that were common to all the long-term alternatives being considered for Sacramento. These included 26 miles of levee stabilization along the Lower American River, raising and strengthening 12 miles of the east levee of the Sacramento River. As the 1997 floods in Northern California demonstrated, we must continue to rehabilitate our existing system of levees to insure they can carry even their intended design flows. The levee modifications authorized under this project complement work done by the Corps in the early 1990s and will complete the job of stabilizing the existing levees protecting this community. The Corps will have three major contracts underway this year, and plans to add two more in 2001. We are requesting an appropriation of $13.0 million, the amount necessary to continue this project and to start on additional improvements added to this authorization in the 1999 WRDA.

Sacramento Bank Protection Project (American River Levees).—SAFCA, the State of California and the Corps have found that bank protection improvements are needed to stop erosion, which threatens urban levees along the lower American River. Over the last four years SAFCA has led a collaborative process through which flood control, environmental and neighborhood interests have reached agreement on how to complete this work in a manner which protects the sensitive environmental and aesthetic values of the American River in addition to improving the reliability of the levee system. As a result, an American River Bank Protection Construction Program was implemented under the Sacramento River Bank Protection authorization. The President has included $3.3 million in his budget to fund bank protection projects. SAFCA is requesting an appropriation of $5.0 million the amount necessary to complete the small increment of work remaining on the American River and important projects at other locations in the Central Valley.

American River Watershed (Natomas Features).—In 1992, the recommended plan for the American River was construction of a flood detention dam at Auburn and levee improvements around Natomas and lower Dry and Arcade Creeks. Congress did not include the recommended project in the 1992 WRDA, but in subsequent legislation did authorize the levee improvements around the Natomas basin and North Sacramento. The authorizing legislation included provisions to reimburse the local agency for the Federal share of constructing levee improvements that were consistent with the Federal project. With over 75,000 residents at risk, subject to life threatening flood depths of 20 feet in some areas, SAFCA decided to initiate construction of the project using local funds with the potential for future Federal reimbursement. By borrowing heavily from other sources and debt financing through a capital assessment district, SAFCA proceeded to rapidly construct a $60.0 million project that was consistent with the 1992 authorization. However, the Corps 1992 report described levee improvements that were consistent with controlling flow in the American River with a dam at Auburn. SAFCA felt the construction of that project was uncertain and therefore decided to construct higher levees and make other improvements than those described in the Corps' report. These improvements were instrumental in preventing flooding in 1995 and 1997. However, the borrowing of funds, coupled with additional future flood control obligations, has severely strained SAFCA's financing capability. The Corps has agreed to reimburse SAFCA $21.0 million, their estimate of the costs of building the project described in their 1992 report and Congress has appropriated funds consistent with that agreement. The Corps has also agreed to consider reimbursement for higher levees, and SAFCA is preparing the documentation necessary to support a Corps' review. We are asking for an additional appropriation of $5.0 million. One million is to finance the Corps' review and analysis of SAFCA's request, and the remaining $4.0 million would be a first payment on the second phase of reimbursement.

American River Plan.—As noted above, the modifications to Folsom Dam provide a significant increment of additional flood protection to Sacramento, but do not allow us to reach our goal of at least 200-year flood protection. Congress recognized the need for additional flood protection in the 1999 WRDA, and directed the Corps to proceed with additional studies and report back in March 2000. The Corps has done their best to comply with Congressional direction and has prepared a report that is moving through headquarters on its way to Congress. Unfortunately, additional work may be needed to supplement the results of that study, including further environmental analysis consistent with the requirements of NEPA and CEQA. The Administration has included an allocation of $3.385 million to allow the Corps to complete a more detailed analysis on the matters identified by Congress. SAFCA supports an increase to $5 million to speed up this important study.

Lower Strong and Chicken Ranch Sloughs.—SAFCA, in cooperation with Sacramento County, is seeking appropriations of $0.5 million to allow the Corps to complete it feasibility study for Lower Strong and Chicken Ranch Sloughs. Floodwaters from these urban streams are collected at the base of the American River levees and pumped into the river. In 1986 and again twice in 1997, the limited channel and pumping capacity led to significant flood damages to a number of residential and commercial structures. Most of the flooding occurs when the American River is at a high stage due to releases from Folsom Dam. The original pump station was built by the Corps as part of the American River and Folsom project in the 1950s, but does not have sufficient capacity to prevent flooding from today's larger storms. The Corps has completed a reconnaissance evaluation and concluded that there is a Federal interest in completing a feasibility study. This appropriation would allow that study to move forward on an optimal schedule.

Magpie Creek (Section 205 Continuing Authorities Program).—The Magpie Creek Diversion Project, constructed by the Corps in the 1950s as an extension of the Sacramento River Flood Control Project, is inadequate for even the 100-year flood event using new hydrologic data. The resulting floodplain encompasses residential and commercial developments downstream and would close Interstate 80, the major east-west transportation route through Sacramento. The Corps has developed a Section 205 project for the off-bas portion of Magpie Creek. The Congress last year also included a separate Section 205 authorization for the on-base portion under WRDA 99. A Corps study of the off-base portion indicates these improvements have a benefit to cost ratio of 2.5 to 1 and not only protect existing urban development and are essential to provide capacity for future improvements on McClellen Air Force Base to allow for orderly redevelopment activities as part of the base conversion process. Congress designated funds in last year's Energy and Water Appropriations bill to initiate work on the off-base project, but construction has been delayed. SAFCA supports the Administration's proposed fiscal year 2000 budget for the Section 205 Program and requests the Corps be directed to initiate construction of the

Magpie Creek Diversion Project within these available funds. In addition, we are seeking funding designation of $500,000 to begin work on the off-base portion of the project as authorized in WRDA 99.

PREPARED STATEMENT OF THE CITY OF PHOENIX

Mr. Chairman and Members of the Subcommittee: On behalf of the City Council and the residents of Phoenix, the sixth largest city in the country, I would like to submit the following testimony for the record. I am pleased to present this testimony in support of appropriations to help our city and region continue to foster a partnership with the Federal Government to achieve our shared objectives. We have been working with our delegation, this Committee, the Corps of Engineers, the Bureau of Reclamation, and other federal agencies to promote environmental restoration and flood control needs in the most effective and economical way. We sincerely appreciate the past support of this Committee and trust we will continue our partnership to see several critical projects through to a successful conclusion.

There are several initiatives under way which this Committee has supported in the past and are included in the President's Budget. Continued support is essential to achieve the public benefits for which the projects are being designed.

RIO SALADO AND RIO SALADO PHASE II

We have been working for nearly six years with the Corps of Engineers in a cost-shared partnership to study a project to restore riparian wetlands along the Salt River in downtown Phoenix and Tempe. The wetlands were lost over many years as a result of diversion of Salt River flows for irrigation of the surrounding region.

In cooperation, the Corps, the City of Tempe, and we have developed a cost-effective plan called Rio Salado to restore about seven miles of the lost riparian wetlands. The plan has been approved by the Secretary of the Army and the Administration and was authorization in the 1999 Water Resources Development Act (WRDA).

The Rio Salado project is the centerpiece of our efforts to revitalize the environment and the economy of a part of our city that has not enjoyed the fruits of progress as have other parts of the city. The President's fiscal year 2001 Budget included a request for $1.5 million for the Phoenix portion of the project. The Rio Salado project was one of only two Corps of Engineers environmental restoration projects to receive New Start Construction funding. While we are delighted at receiving the new start designation in the budget, we are seeking a substantially higher level of funding (a total of $20 million) to allow the project to remain on schedule for completion. We are eager to keep the $81 million dollar Phoenix portion of the Rio Salado project on its planned course of the three-year construction period at a 35 percent local, and 65 percent federal cost.

In addition, we are urgently seeking the approval of the Committee early this calendar year to negotiate an agreement with the Corps to provide a credit against the local share of project costs for advanced funding of key features of the project. The Report of the Chief of Engineers recommending the project authorization envisioned construction by the City of a low flow channel and development of plantings needed for the project in advance of Federal funding. Based on these commitments, the City has worked with Maricopa County to obtain $11 million in county funding and has also identified an additional $3 million in city funding to move forward with the City's commitment to this project. We are ready to proceed to construction and have begun preliminary work to obtain the needed plants for the project. However, we do not want to jeopardize our ability to receive credit for local work done. Mr. Chairman, we respectfully request your approval of the credit agreement this year and your support for the $20 million in fiscal year 2001 to accelerate the project's schedule and begin construction.

The Rio Salado Phase II portion (Rio Este and Rio Oeste) of this environmental restoration project was included in the Corps of Engineers Reconnaissance Study in 1996. The study led to a feasibility level report and authorization of the Rio Salado project, consisting of only a portion of the original reconnaissance level study area. We would like to move beyond the reconnaissance level for the rest of the original study area. This would essentially be a continuation of the Rio Salado project and would connect the project east (Rio Este) toward the Tempe portion or west (Rio Oeste) toward the Tres Rios project at our 91st Avenue Treatment Plant. We are seeking $675,000 for the Corps of Engineers Feasibility Study for Phase II, including the $175,000 in the President's budget for both the Rio Este and Rio Oeste portions and a $500,000 increase for Rio Oeste to allow us to accelerate that study. The

Feasibility funding will be matched 50 percent by the local sponsor. We strongly urge your support for this appropriation.

TRES RIOS

This is a truly unique project the outcome of which holds promise to benefit the entire nation as well as the Phoenix region in particular. The Bureau of Reclamation has constructed a demonstration project which uses wastewater from the regional wastewater treatment plant to create wetlands near the discharge location. The Bureau's project is authorized under their general research and demonstration authorities under their Title XVI Water and Wastewater Reclamation and Reuse Program. We are seeking the $550,000 included in the Bureau's budget to continue this research effort to be able to include in the pilot study measures to control mosquito vectors, an important public health issue.

In addition, we embarked on a cost-shared feasibility study with the Corps of Engineers to expand the project to create approximately 800 acres of high quality wetlands along a 7 mile stretch of the Salt and Gila Rivers. The feasibility study is nearing completion and Congress provided an initial $50,000 in fiscal year 2000 to initiate planning, engineering and design. This year's budget requests an additional $250,000 toward that effort. The City is seeking an increase of $250,000 to accelerate that effort.

The City is also requesting funding from the Bureau of Reclamation in the amount of $300,000 to allow the Bureau to begin studies on the Agua Fria River groundwater recharge project under the authority of section 1608 of the Bureau's Title XVI Reclamation and Reuse Program. It is important to have that portion of the study completed in about the same time frame as the rest of the study and design work to avoid losing the water coming from the wetlands restoration project.

GILA RIVER, NORTHEAST DRAINAGE AREA.

This is another innovative study designed to anticipate potential flood control problems from the rapidly expanding development on the alluvial plains in the Northeast section of the greater Phoenix area. The results of the study will allow local jurisdictions to plan and regulate development in a coordinated way throughout the region to avoid creating flooding problems as has happened in many other rapidly growing areas in the nation. We believe that spending a little time and planning effort now will reap large savings in flood control costs and flood damages in the future. The Corps budget contains $212,000 for this study which we believe is enough to keep it on schedule.

SUMMARY

All of these projects, the Rio Salado and Phase II of the Rio Salado project ("Rio Este" and "Rio Oeste"), Tres Rios, and the Gila River, will act in synergy to restore lost environmental quality and provide for creative management, conservation, and reuse of scarce water quantities in the Phoenix Metropolitan Area. We sincerely appreciate the opportunity to present this request and thank you very much for your support in the past. We would be pleased to provide any additional information you may need.

PREPARED STATEMENT OF THE CITY OF SAN LEANDRO, CALIFORNIA

Mr. Chairman and Subcommittee Members, thank you for this opportunity to present testimony. I am Shelia Young, Mayor of San Leandro, California. It is my aim to provide the Subcommittee with a brief overview of the history and importance of performing maintenance dredging on the San Leandro Marina Channel, a project that was unfortunately omitted from the President's fiscal year 2001 budget.

The San Leandro Marina Channel connects deeper waters in the San Francisco Bay to the San Leandro Marina and the San Leandro Shoreline Recreation Area. First dredged in 1962, it provides a host of benefits to the immediate San Leandro community and the entire San Francisco Bay Area. The Marina and Shoreline Recreation Area includes 455 boat berths, three restaurants, a small-boat sailing lagoon, two golf courses, extensive park facilities, the San Leandro Shoreline Marshlands, a trail system along most of the shoreline and a unique Dredged Material Management Site, or DMMS. Additionally, in the event of an aircraft crash at the Metropolitan Oakland International Airport, the Marina Channel provides water access for boats leaving San Leandro to provide search and rescue functions.

Simply stated, without regular dredging, the Marina and Shoreline Recreation Area would be cut off from the rest of San Francisco Bay. To ensure that the Marina

Channel remains open, San Leandro formed a partnership with the Federal government through the Army Corps of Engineers to perform dredging activities. Congress first authorized funds for maintenance dredging in 1971, and the City and the Corps have worked collaboratively ever since to proactively address dredging needs. Local and Corps analysis of Channel build-up has led to a quadrennial dredging cycle. Maintenance funds were included in President Bush's fiscal year 1993 budget and President Clinton's fiscal year 1997 budget. It then came as a great surprise that funds were not included in the President's fiscal year 2001 budget, especially considering that the Corps has already worked with the City to obtain permits for fiscal year 2001 dredging.

There have been no significant changes in the rate of Channel build-up that would necessitate a change in the quadrennial dredging cycle. Changes in water depth are following the same pattern as those preceding the 1997 dredging. In fact, the current cycle spaces dredging activities as far apart as possible. Prior to 1997 dredging, controlling water depth in the Channel dropped to less than two feet. As I sit here today, navigation problems are already beginning to occur as we approach the end of this cycle.

I want to stress San Leandro's commitment to the Marina Channel through the expenditure of local funds and overall environmental stewardship, most visibly through the creation and operation of a Dredged Materials Management Site. As in-bay aquatic disposal of dredged materials is environmentally undesirable, the Army Corps and the Environmental Protection Agency are developing a Long Term Management Strategy (LTMS) for Bay Area dredging and disposal activities. Recognizing the need to properly dispose of dredged materials, San Leandro has been a pioneer in developing an alternative to in-bay disposal. The DMMS not only effectively stores material, it functions as a shorebird habitat. The City has borne the full financial responsibility for the operation of the DMMS since its initial use in 1973, and pays the full cost to dispose of dredged materials. Together, this requires an annual expenditure of over $2 million.

As you can see, the Marina Channel is a vital economic and environmental link for San Leandro's entire shoreline. Failure to dredge will lead to immediate negative economic consequences. The San Leandro Marina, at the heart of our coastal community, will cease to exist. The millions of dollars the Marina generates for the local economy will be lost. Public recreation along the shoreline will diminish, and environmentally sensitive areas of shoreline restoration will be in jeopardy.

Mr. Chairman and distinguished Subcommittee Members, I support and admire your efforts as you perform the difficult job of meeting America's energy and water needs. I firmly believe that San Leandro's request is reasonable and necessary, and I urge the Subcommittee's approval of $1.5 million for this project. Thank you again for your time.

PREPARED STATEMENT OF THE CITY OF OCEANSIDE, CALIFORNIA

OCEANSIDE HARBOR OPERATIONS AND MAINTENANCE AND OCEANSIDE SHORELINE PROTECTION STUDY

Mr. Chairman, thank you for this opportunity to submit testimony on behalf of the City of Oceanside, California. The City of Oceanside respectfully requests your favorable consideration of two Corps of Engineers projects that are critically important to our community.

First, the City of Oceanside requests an appropriation of $2,035,000 under Corps of Engineers, Operation and Maintenance, for Oceanside Harbor, California. The majority of the funds requested ($1,535,000) are included in the president's budget submission to pay for on-going maintenance dredging of Oceanside Harbor. The additional $500,000 above the budget request is needed for the one-time costs associated with removing a submerged jetty from the Harbor entrance.

Removal of the jetty will eliminate a significant hazard to navigation and expand the width of the navigational channel, which was reduced when the entrance was modified in 1994.

The Corps of Engineers modified the Oceanside Harbor entrance to reduce storm damage, provide surge protection to the harbor infrastructure and provide significant reduction of navigational hazards. Part of the project included a 180-foot stub groin off the south jetty. This groin protrudes significantly into the previous channel, reducing the width by approximately 50 percent. It is currently not possible to realign the channel to widen the entrance to the Harbor due to the submerged jetty that borders the north side of the Harbor entrance.

The close proximity to the navigational channel is a hazard to navigation for vessels that stray from the channel limits. During heavy surf and storms, the entrance becomes very hazardous and was closed by the U.S. Coast Guard during the 1998 El Niño events. Breaking waves have come in as far as the submerged jetty light #5.

The elimination or relocation of the submerged jetty is necessary to provide for the channel to be returned to its original width. The submerged jetty is an old structure that was in place prior to the outer jetty's construction. It may not be necessary to eliminate the submerged jetty. Relocating the rock material closer into shore would provide for a restored channel width, while continuing to provide a marine life habitat.

Second, the City of Oceanside requests an appropriation of $500,000 under Corps of Engineers, General Investigations, to continue a special study to develop plans to mitigate the impacts of the Camp Pendleton Harbor on Oceanside's shoreline.

The Committee provided $100,000 in the fiscal year 2000 Energy and Water Development Appropriations bill to initiate a study to determine the extent of the erosion impact caused by Camp Pendleton Harbor. That study is now underway and will provide a summation of all historic and current documentation of the impacts of the federal construction on the Oceanside beach.

Oceanside has a 57-year history of beach erosion resulting from the Camp Pendleton Harbor construction that began in 1942. The Federal Government acknowledged responsibility for Oceanside's beach erosion in 1953. A later report to the U.S. Navy from the Army Corps of Engineers noted that the construction of the Camp Pendleton jetties had compartmentalized the littoral cell and resulted in the loss of 1.5 million cubic yards of sand in Oceanside during 1950–1952. An additional U.S. Army Corps of Engineers report to Congress in 1956 concluded that the restoration of the protected beach at Oceanside would protect the upland area and restore and maintain a satisfactory recreational beach. In 1958, the Navy extended the north jetty to reduce the entrance channel maintenance problems. This action further aggravated the erosion of the beaches.

In 1967, Congress authorized a review study of beach erosion at Oceanside, resulting in the office of the Chief of Engineers confirming 100 percent federal responsibility for shoreline damages. Despite numerous and significant efforts in placing sand on the beach, periodic nourishment of sand from maintenance dredging of the harbor and sand bypassing project, no permanent solution to the massive erosion problem has been achieved.

Tourism is the San Diego region's second largest industry. The areas beaches, including Oceanside, represent a key attraction for our residents and our tourists. The San Diego Convention and Visitors Bureau notes that the majority of the region's visitor lodgings are located along the coastline. Total tourism dollars are identified as $4.7 billion annually. San Diego and Oceanside's beaches are clearly an economic contributor to the region's economic well-being.

Significant portions of Oceanside's beaches are not able to provide full recreational and tourism revenue benefits due to the eroded beach conditions. Furthermore, the beaches are too narrow to provide full and adequate protection to public infrastructure, commercial facilities and residential structures. Addressing this problem will significantly decrease storm damage costs along the City's shoreline.

Mr. Chairman, again, on behalf of the City of Oceanside, I request the Committee's support for these two critically important projects.

Thank you for the opportunity to provide this testimony and for your consideration of the request.

PREPARED STATEMENT OF THE HUMBOLDT BAY HARBOR, RECREATION, AND CONSERVATION DISTRICT

Mr.Chairman and Members of the subcommittee, thank you once again for the opportunity for me, Roy Curless, as President, on behalf of the Board of Commissioners of the Humboldt Bay Harbor, Recreation, and Conservation District in Eureka, California to submit prepared remarks to you for the record in support of the fiscal year 2001 Energy and Water regular appropriations measure to fund the U.S. Army Corps of Engineers in the first full year of the new millennium. The Humboldt Bay Harbor District's Chief Executive Officer David Hull and I will represent the Commission and District in meetings with subcommittee staff and agency representatives and respond to any project-related questions that arise during those meetings and appearances.

Today the citizens of the North Coast region—and the First Congressional District of California have reason to celebrate. We stand on the threshold of a new era in

navigation safety and future economic development. Our traditional forest products industry continues to suffer from a precipitous decline, and our fisheries industry is facing a potential catastrophe with a moratorium on bottom fishing, and the listing of several species. However, sometime next month, construction of the Humboldt Harbor and Bay Navigation Project authorized in the Water Resources Development of 1996, is expected to be substantially completed. Given a ten day project delay triggered by a frivolous legal challenge, and our notorious winter weather conditions, the near completion of this project represents a magnificent accomplishment by the U.S. Army Corps of Engineers and the private contractors. We commend them for their efforts.

The commission recognizes and expresses its debt of gratitude to our congressional delegation, including Chairman Packard and the members of this subcommittee, our Congressman Mike Thompson, and to Senators Boxer and Feinstein for their continuing efforts in funding the Humboldt Harbor and Bay Navigation Project. This project is of critical importance to the future development of Humboldt Bay and County, and the entire northcoast region of the State of California.

We are likewise grateful to the subcommittee for including $4.189 million in the operations and maintenance general account for fiscal year 2000. We support the President's budget request for an additional $4.710 in the operations and maintenance general account for fiscal year 2001 and request the subcommittee increase this amount to $6.210 million.

The increased budget request for fiscal year 2001 is necessary to perform additional work on the channel boundaries at Humboldt Bay's entrance in the paramount interests of navigation safety and environmental protection. In addition, expanded survey work to monitor the new hydrodynamics of the channel after completion of project construction is essential for safety and future maintenance planning. Our additional request above the President's budget is based upon a recent Corps survey south of the navigation channel. Sand accumulation in this area is impacting the main channel and requires additional maintenance dredging with the intended result of saving additional money, lives and the bay environment over the long term.

Completion of the long sought new construction project will make us more of a year round safe harbor and help U.S. compete to restore our traditional forest products industry based upon sustainable yields, while at the same time diversify our maritime economy reeling from recent closures of our bottom fisheries.

For those unfamiliar with the geography, Humboldt Bay is the only deep-draft natural harbor strategically situated along five hundred miles of Pacific coastline between San Francisco and Coos Bay, Oregon. Prevailing winter wave conditions at the Humboldt Bar and entrance have posed extreme navigation safety hazards, resulting in loss of life and significant property damage over the years.

To us, periodic maintenance can be a life and death, as well as economic, survival matter. We are extremely grateful for the commendable efforts by the San Francisco District of the U.S. Army Corps of Engineers to combine maintenance and construction dredging last year to alleviate severe shoaling conditions at our bar and entrance which posed additional safety risks of grounding over and beyond those inherently unsafe seasonal conditions now largely remedied by the channel improvement project itself.

Project completion will provide unique economic development opportunities for the North Coast Region. These capitalize upon our natural resources base enabling us to ship our commodities to world markets at competitive freight rates, and ship more of our imports and exports by water rather than transship them long distances by road or rail to market. At the same time it will permit us to diversify our economic base by improving our transportation infrastructure and attracting new industrial activity to an area largely dependent upon the economic well-being of the Forest Products Industry. We are currently suffering from closure of major facilities and continuing uncertainty surrounding the industry's future as a major contributor to our long term economic base.

With the support of then Congressman Riggs, Congress authorized the Humboldt Harbor and Bay 38 foot deep draft navigation project in section 101 of the Water Resources Development Act of 1996 (WRDA 1996) (Public Law 104–303) at an estimated total construction cost of $15,178,000 with a required local contribution of $5,180,000, and a first federal cost of $10,000,000. The project has a 1.9 to 1 favorable benefit cost ratio. It enjoys the consensus support of federal, state, regional, and local agencies.

In June 1998, with the support of the California Maritime Infrastructure Authority in the first of its kind issuance of revenue bonds to finance a federal navigation project, we were able to raise $3.9 million matched by an additional $1.0 million in local redevelopment agency funds from the City of Eureka to meet our required local contribution to project construction cost.

In order to provide an additional revenue stream from which to service the debt incurred in meeting its financial obligations, the district has implemented the first of its kind harbor user fee (harbor improvement surcharge) under section 208 of WRDA 1986 so that vessels and cargo benefitting from the navigation improvements will share in the cost of providing them.

This time last year thanks to an accelerated final review by Secretary Westphal's staff, we were able to sign our project cooperation agreement here in Washington paving the way for advertisement and contract award and now anticipated completion of construction this year.

On behalf of the members of the commission and district, we appreciate those prior occasions in which we have had the opportunity to appear before the subcommittee. We look forward to appearing before this subcommittee on future occasions to provide updated reports on the economic benefits and progress we expect will follow the successful completion of this project. We are prepared to supplement our prepared remarks for the record in response to any questions that the Chair, subcommittee members, or staff may wish to have us answer.

Thank you Mr. Chairman and members of the subcommittee. This concludes my prepared remarks.

PREPARED STATEMENT OF THE CITY OF SACRAMENTO

On behalf of the City of Sacramento, I would like to thank you for the opportunity to provide testimony to the Senate Appropriations Subcommittee on Energy and Water Development in support of fiscal year 2001 funding for flood protection projects in Sacramento. First, I would like to express my appreciation to the Subcommittee for its efforts in past years to fund flood control measures for the City. Sacramento, California, continues to face the highest flood risk in the nation. During the past several years, the Subcommittee has recognized the dire need for flood protection in and around the Sacramento area and has provided funds for a variety of previously authorized projects. In order to continue our efforts, we must once again request your support for funding vital Sacramento area flood control projects in fiscal year 2001.

This year, the City of Sacramento is seeking $48.5 million in federal funding in order to finance both ongoing and newly authorized projects, which are described in the enclosed chart. These figures represent the most recent estimates developed by the Sacramento Area Flood Control Agency and are derived from their discussions with the U.S. Army Corps of Engineers (Corps). Most importantly, the City is seeking funding for two "new starts" that were authorized by the Water Resources Development Act of 1999 (WRDA 99): modifications to Folsom Dam and construction of the South Sacramento Streams Group. These two projects will form the backbone of a system of improvements that may someday once and for all remove the threat of catastrophic flooding from the streets of downtown Sacramento, site of our State Capitol and home to 400,000 residents. We have worked closely with the Corps in planning these projects and have determined that they are in line with the Corps ability to spend for their fiscal year 2001 budget. Obtaining new start funding for these important projects is a task that will greatly benefit from your leadership.

The overall Corps of Engineers' budget request for all of Sacramento's flood control projects is $21.9 million, meaning that Congress must double the Administration's request in order to meet the City's flood control needs. The Administration's budget request is nearly $12 million below its request last year and over $13 million below the amount Congress appropriated in fiscal year 2000. The City urgently needs the Subcommittee's leadership and support to obtain our full funding request in order to move forward with these previously authorized projects.

The City is pleased that the Administration has proposed "new start" construction funding for modifications to Folsom Dam, which will enable the dam to release flows from Folsom Lake more quickly in order to better protect the City from flooding during large storms. However, the Administration's proposed funding of $5.0 million for the Folsom modifications project falls far short of the full amount needed next year. We urge the Subcommittee to support our full request of $12.0 million to begin this urgently needed construction on Folsom Dam.

Due to the significant flood risk along creeks in the South Sacramento area, the U.S. Army Corps of Engineers was authorized in WRDA 99 to begin construction on the South Sacramento Streams Group, which would protect areas in south Sacramento from catastrophic flooding in the four creeks that convey foothill runoff through this urbanized area. The Administration has requested $200,000 for preconstruction engineering and design (PED). This amount is far below our re-

quest. We urge the Subcommittee to fund $5.0 million to begin both PED and construction for this project.

The U.S. Army Corps of Engineers proposed budget provides $10.0 million for continuation of construction of the Common Elements, which comprise levee improvements and other measures authorized by WRDA 96. This level of funding is below the amount necessary to keep the project moving forward, and we ask that the Subcommittee instead support our request $13.0 million, which includes $1.0 million to begin work in levee parity which was authorized in WRDA 99. The Common Elements Project is a vital first step in our flood control efforts, and full funding to keep this project on track is essential.

The City of Sacramento has been working in cooperation with the Sacramento Area Flood Control Agency (SAFCA) on the construction of bank protection improvements which are vital to correct harmful erosion along the banks of the American River which threatens the integrity of our existing levees. Additional improvements will be needed over the next several years to prevent erosion at other American River sites. This work is already authorized under the Sacramento River Bank Protection Project, which is used to fund erosion control projects throughout the Sacramento River System. The President's budget proposes $3.3 million for the Sacramento River Bank Protection Project, which is below the amount requested. We request that Subcommittee support our request for $5.0 million.

For the American River Watershed (Natomas) improvements which were authorized by Congress in 1992, we are seeking continued construction appropriations in the amount of $5.0 million for reimbursement to SAFCA for the Federal share of the flood control improvements.

The President's Budget for fiscal year 2001 provides for $3.285 million in PED funds for the American River Watershed plan, which will continue previously authorized planning and design of Sacramento flood control projects. We urge the Subcommittee to instead support our request for $5.0 million in PED funds for the American River Watershed plan.

This is the second year that the City is seeking funds for the Lower Strong & Chicken Ranch Sloughs (DO5 Pump Station) project. This is a feasibility study to restore 100-year level of flood protection to Chicken Ranch Slough drainage to the American River. The President has requested $150,000 for this project. We urge the Subcommittee to fund our full requested amount of $500,000.

Under the Corps' Section 205 program, a feasibility study and environmental documentation have been completed for a project that would provide a high degree of flood protection on Magpie Creek. This year, the President has requested $25.0 million for all Section 205 flood control projects. We urge the Subcommittee to support Section 205 funding in the fiscal year 2001 budget and recommend that the Corps of Engineers be directed to provide $2.5 million for completion of the Magpie Creek project and $500,000 for McLellan Air Force Base in its distribution of Section 205 funds.

Once again, thank you for the opportunity to submit this statement and for your consideration of the funding that the City of Sacramento needs to protect its residents. As the Mayor of the most flood prone of American cities, adequate flood protection is the number-one priority for my administration. I thank you again for your commitment in previous years to providing this vital protection and ask for your renewed support in assuring its continuation.

FISCAL YEAR 2000–2001—SACRAMENTO AREA FLOOD CONTROL

[In millions of dollars]

Project	FY 2001 Admin. Request	FY 2001 SAFCA/City Request
Folsom Modifications: Modifications to Folsom Dam to provide greater efficiency in managing flood storage in Folsom Reservoir. NEW START	5.0	12.0
South Sacramento Streams: Prevention of flooding of portions of Sacramento from the south, where four creeks convey foothill runoff through urbanized areas into Beach Lake and the Delta. NEW START	0.2	5.0
American River Common Elements: 24 miles of levee improvements along the American River and 12 miles of improvements along the Sacramento River levees, flood gauges upstream of Folsom Dam, and improvements to the flood warning system along the lower American River. Request includes $1.0 million to begin work on levee parity, authorized in WRDA 1999	10.0	13.0

FISCAL YEAR 2000–2001—SACRAMENTO AREA FLOOD CONTROL—Continued

[In millions of dollars]

Project	FY 2001 Admin. Request	FY 2001 SAFCA/City Request
Sacramento River Bank Protection: Will correct harmful erosion along the banks of the American River which threatens the integrity of the existing levees	3.3	5.0
American River Watershed (Natomas): Reimbursement to SAFCA for the Federal share of the flood control improvements undertaken by the local project sponsor	.....	5.0
American River Plan: Funds to continue previously authorized planning and design of Sacramento flood protection projects	3.285	5.0
Lower Strong & Chicken Ranch Sloughs (DO5 Pump Station): a feasibility study to restore 100-year level of flood protection to Chicken Ranch Slough drainage to the American River	0.15	0.5
Magpie Creek: Authorized under the Corps' Section 205 program, this project will provide a high degree of flood protection on Magpie Creek	[1] N/A	2.5
McClellan AFB	.....	0.5
Total	21.935	48.5

[1] The Corps has requested $25.0 million for the Section 205 program, which funds these two projects. Individual projects are not itemized in this request.

Prepared Statement of the Colusa Basin Drainage District

Mr. Chairman and Members of the Committee: The Colusa Basin Drainage District requests the Committee's support for $1 million for fiscal year 2001, under Bureau of Reclamation, Central Valley Project, Sacramento River Division, for the Colusa Basin Drainage District Integrated Resources Management Plan.

The 650,000-acre Colusa Basin Drainage District, located on the west side of the Sacramento River, serves a watershed exceeding one million acres. It covers three counties: Glenn, Colusa and northern Yolo Counties. It is not only a rich agricultural area, but a rich wildlife area as well, including three national wildlife refuges.

Over the decades, devastating floods have repeatedly struck the Colusa Basin resulting in costly damage to public and private property, and loss of life. In 1995, and again in 1998, these three counties suffered an estimated $100 million in losses and one death due to floods. In November 1995, a majority of landowners voted to implement the District's Integrated Management Plan to address flood dangers while achieving other benefits: increasing groundwater supplies and surface water storage, and improving environmental and wildlife uses in the watershed.

Through a stakeholder/local, state and federal agency collaborative process, four projects have been selected to serve as a demonstration of the region's integrated resources management. Under the program, hydraulic studies were completed in 1998, basin-wide programmatic environmental documentation commenced during 1998 and is scheduled for completion later this year. Project specific environmental documentation will commence and be completed during fiscal year 2001.

The Colusa Basin Drainage District, working collaboratively with the Bureau of Reclamation and a variety of local and agency stakeholders, has developed an Integrated Resources Management Plan for water management that addresses flooding and will provide opportunities for future conjunctive use of water resources to meet the diverse needs of agricultural, urban and wildlife interests in the Colusa Basin. The District's Plan consists of three components: structural facilities, nonstructural flood control measures, and environmental restoration/enhancement measures, including the restoration and protection of 3,000 acres of wetlands. All new water supply developed as a result of flood control improvements will be dedicated to the environment.

The Colusa Basin Drainage District appreciates your past support for our integrated resources management plan for water management that addresses flooding and provides opportunities for future conjunctive use of water resources.

Thank you for your continued support.

PREPARED STATEMENT OF THE KAWEAH DELTA WATER CONSERVATION DISTRICT

Mr. Chairman and Members of the Subcommittee: My name is Bruce George, and I am the Manager of the Kaweah Delta Water Conservation District in the eastern San Joaquin Valley of California. Thank you for the opportunity to present testimony regarding the fiscal year 2001 budget for the U.S. Army Corps of Engineers.

The President's fiscal year 2001 budget request for the Corps of Engineers includes $500,000 to continue construction of a project to increase the water storage capacity of Terminus Dam at Lake Kaweah in California's San Joaquin Valley. The project would add approximately 43,000 acre-feet of flood control and conservation storage space to Lake Kaweah by raising the Terminus Dam spillway by 21 feet. The estimated total first cost of the project is $35 million.

Unfortunately, the level of funding in the President's budget will not allow the project to proceed on an optimum timetable. As a result, total costs to the federal government, the State of California and the local sponsors will be increased.

We respectfully request that the Subcommittee support an appropriation of $3 million for construction in fiscal year 2001. This will allow work to go forward at an efficient pace that is within the Corps' capabilities.

The Corps of Engineers studied and planned this modest project for more than 10 years. Last year, Congress appropriated $2.5 million to initiate construction in fiscal year 2000. The State of California is the lead non-federal sponsor of the project and has appropriated the necessary funds for construction. In addition to the Kaweah Delta Water Conservation District, the other local sponsors are the counties of Kings and Tulare, the City of Visalia and the Tulare Lake Basin Water Storage District.

The California Water Commission supports a $3 million General Construction appropriation for the Terminus Project in addition to the amount requested in the President's fiscal year 2001 budget for operation and maintenance.

BACKGROUND

The Kaweah Delta Water Conservation District was formed in 1927 to conserve and protect the surface and groundwater of the Kaweah delta. The District serves 337,000 acres, which include the cities of Visalia and Tulare and several other incorporated and unincorporated areas in Kings and Tulare counties. Those two counties consistently rank among the most productive agricultural counties in the nation.

Terminus Dam and Lake Kaweah, located on the Kaweah River three and one-half miles east of the District, was completed in 1962 by the U.S. Army Corps of Engineers. The purpose of the project is to provide storage space for flood protection and irrigation on the Kaweah River. The Conservation District manages the irrigation and flood control releases for Lake Kaweah, as well as assisting in the conjunctive use of the surface and groundwater of the Kaweah delta.

Flooding downstream from the dam occurs when flows from individual creeks blend together and form a sheet flow through urban and agricultural areas. Included in the flooded areas are the communities of Visalia, Farmerville, Tulare, Ivanhoe and Goshen. Since construction of Terminus Dam, 10 damaging floods have occurred, the most recent in 1997 and 1998.

Inadequate flood protection and a long-term groundwater overdraft in the region have created a need for greater reservoir storage space for flood control and irrigation storage. With a maximum capacity of 143,000 acre-feet, Lake Kaweah currently provides a less than 50-year level of flood protection for communities downstream. Raising the spillway at Terminus Dam (by the installation of fuse gates) would increase the reservoir storage capacity by 30 percent, thus providing a much higher level of flood protection for the region.

California's growing population will place ever-increasing demands on its water supply and flood control infrastructure. Improving existing facilities such as Terminus Dam is one of the most economical and environmentally sensitive ways to meet those new demands. It is important for Congress to encourage such projects.

We are grateful for the Subcommittee's continued support of the Terminus project.

PREPARED STATEMENT OF THE NATOMAS MUTUAL WATER COMPANY

Mr. Chairman, Members of the Committee: On behalf of the Natomas Mutual Water Company, I request the Committee's support for an allocation of $3,000,000 in the fiscal year 2001 Energy and Water Development Appropriations bill, under Bureau of Reclamation, Central Valley Project, Miscellaneous Project Programs, Anadromous Fish Screening Program, for the American Basin Fish Screen and Habitat Improvement Project. The requested funding will be used to complete the

environmental review, design and engineering phases of the project as well as initiate construction on a new flat plate screen and diversion point just north of the City of Sacramento.

Currently, five river diversions from the Sacramento River of Natomas Mutual Water Company, located within a 20-mile stretch, need upgrading to prevent capture of endangered species. Individually re-designing those diversions and installing positive fish barriers on each would be prohibitively expensive. Two of the diversions take water from a body of water called the Natomas Cross Canal at the northern-most point of the service area. That channel receives flows from both the Sacramento River and the Auburn Ravine foothill runoff. During dry years, the Canal is artificially filled with water from the Sacramento River, in order to feed the pumps. Any alternative which could remove the need for those pumps, especially in dry years, would enhance the Cross Canal's potential as a special habitat preserve.

The project will provide fish protection to one of the largest remaining unscreened diversions on the Sacramento River as well as provide important benefits for fish habitat. In addition, the project could provide benefits to other regional water users, including the City of Sacramento, Sacramento County and Placer County Water Agency, all of which are exploring diversion options on the Sacramento River.

The Natomas Water Company would greatly appreciate the Committee's support for this project. Thank you again for your attention to this important project.

PREPARED STATEMENT OF THE HOOPA VALLEY TRIBAL COUNCIL

On behalf of the Hoopa Valley Tribe of California, I express our appreciation for the opportunity to submit testimony regarding the fiscal year 2001 Bureau of Reclamation (BOR) budget. A summary of our fiscal year 2001 funding request follows:

—Support Administration's position that existing laws provide authority to support Trinity River Division fish and wildlife management and restoration activities. Further, the Hoopa Valley Tribe supports the Administration's position that Central Valley Project Improvement Act (CVPIA) funds are authorized for expenditure in the Trinity River Basin.

—Request that $11,500,000 be provided for Trinity River fishery management requirements within the Trinity River Division of the Central Valley Project for continuing fish and wildlife management programs of tribal, state, federal and local entities and continuation of the Comprehensive Co-Management Agreement between Hoopa Valley Tribe and BOR at a funding level of $2,500,000.

—Request $150,000 from the General Activities Planning budget for a feasibility study for upgrading the Lewiston generator, and for Trinity River green sturgeon and Pacific Lamprey population studies.

—Support the Native American Affairs proposed budget and request an increase of $1,000,000 for additional assistance to Indian tribes.

BACKGROUND

The Trinity River in northern California is the largest tributary to the Klamath River, the second largest river system in California. Since time immemorial, the Klamath Basin provided sustenance to Native Americans of the region. The Klamath River Basin is the aboriginal territory of Hoopa Valley, Karuk, Klamath, and Yurok Tribes. Moreover, utilization of fishery resources of the Klamath River has been fundamental to the economic health of northern California providing viable recreational and commercial salmon fisheries.

In 1963, BOR completed construction of the Trinity River Division of the Central Valley Project (CVP). The Trinity River Division currently provides an estimated fourteen-percent of the total water yielded by the CVP.

Shortly after completion of the Trinity Dam, and subsequent diversion of up to 90 percent of the stream flows at the diversion point (near Lewiston, California) from the Trinity River, the fishery began to decline. Through the 1980s, corresponding declines of up to 80 percent of the salmon and steelhead populations occurred. In response to declines in Trinity fish stocks, the Secretary of Interior approved development of a flow evaluation study in 1981 to determine stream flow needs for fish restoration. Further, Congress recognized the seriousness of the problem, and enacted the Trinity River Restoration Act (Public Law 98–541, 1984) which, with subsequent amendments, authorized approximately $70,000,000 in an attempt to reverse the decline of the fishery resources within the Trinity River Basin. However, the downward trend in Trinity fish populations has continued as reflected by listing of coho salmon under the Endangered Species Act (ESA) (May 6, 1997). Steelhead were recently declined for listing under the ESA. Klamath/Trinity Basin chinook stocks were included in a West Coast review of all chinook stocks.

The NMFS concluding that Klamath/Trinity chinook did not presently warrant listing under ESA.

While much work has been accomplished to date, it is recognized that continued monitoring and research will be necessary to provide insight on status of resources, evaluation of restorative measures, and effective management recommendations for further restoration. Primary among the scientific achievements to date has been the development of in-stream flow criteria that quantify the benefits to salmonids of retained flows in the Trinity Basin. These criteria, developed over the entire course of the Restoration Program, provide a basis for the Secretary's flow decision, due in fiscal year 2000. The Secretary's Trinity River Flow Evaluation Study Report was published in June 1999, and the Environmental Impact Statement (EIS) is scheduled for completion by July 2000.

In spite of many years of research into Trinity River ecosystem processes, considerable uncertainty persists in regard to downstream impacts of water releases from Lewiston Dam. These uncertainties are to be addressed via an Adaptive Management Plan (AMP) under the direction of the Interior Secretary. Long-term monitoring and research are essential to the AMP: hypotheses underlying the Trinity River Flow Evaluation Study recommendations will be tested through research; and monitoring data will be used to measure how well river ecosystem health objectives are met.

NARRATIVE JUSTIFICATION AND FUNDING REQUESTS

—The Tribe is in agreement with the Administration's legal conclusions contained in the fiscal year 2001 Budget Justification and Annual Performance Plan—Trinity River Division—that existing authorities provide ample justification for expenditures on fish and wildlife restoration within the Trinity River. The 1955 Act creating the Trinity River Division, Trinity River Fish and Wildlife Restoration Act as amended, and the Central Valley Project Improvement Act (CVPIA) mandate that the Department of the Interior restore and maintain fish and wildlife populations with CVP funds. Furthermore, Congress acknowledged the reserved fishing rights of the Hoopa Valley Tribe in the CVPIA.

—Funding Request for Fish and Wildlife Management—In August 1999, agencies responsible for managing the Trinity River fishery resources determined that $11,500,000 was needed annually to fund comprehensive management within the Trinity River Basin in order to restore the fishery resources to pre-dam levels. The Hoopa Valley Tribe participated in the development of this management plan. Specifically, the Hoopa Valley Tribe requests that an additional $5,000,000 in funds be provided for restoration of Trinity Basin fish and wildlife resources. Presently, the Administration has proposed a fiscal year 2001 budget of $5,600,000

Therefore, the Tribe requests that the Committee provide $11,500,000 for Fish and Wildlife Management and Development within the Trinity River Division budget and that $2,500,000 of this amount be allocated specifically for the maintenance of the Comprehensive Co-Management Agreement between the Tribe and BOR. The requested funding would ensure the Tribe's involvement in water project operations planning, environmental impact analysis, hatchery investigations, fisheries management, and would accelerate resource restoration through unified, inter-governmental management actions. Most of these activities will be addressed via the Adaptive Environmental Assessment and Management process (AMP) as described in the Trinity River Flow Evaluation Final Report.

In its seventh year, the Co-Management Agreement between Hoopa and BOR has contributed not only to the fulfillment of the Federal trust responsibilities to Native Americans, but has also served to bring Federal, State, Tribal and local management agencies together into a constructive and cooperative forum for managing fishery and water resources within the Trinity River Basin.

—Request $150,000 from the General Activities Planning budget for a feasibility study for upgrading the Lewiston Hydro-power generator, green sturgeon and Pacific Lamprey studies. It is expected that the Interior Secretary's Trinity River permanent fishery flow decision will result in reduced diversions of Trinity River flows into California's Central Valley. While being greatly beneficial to Trinity River fishery resources and upholding the federal trust obligations to Indian tribes, the decision will likely reduce the amount of electricity generated from diverted flows. To compensate for this situation, the Tribe requests that $100,000 be provided from Reclamation's General Activities Planning budget for determining the feasibility of increasing the capacity of the Lewiston Powerhouse generators in anticipation of the increased releases to the Trinity River. An expected benefit of increased generation of electricity from the Lewiston

powerhouse is the possibility of using its revenues to pay for future fish and wildlife restoration activities within the Trinity River Basin, thereby reducing long-term costs to the Federal Government.

In addition, the Tribe requests that $50,000 be provided for conducting population and fish health studies for Trinity River green sturgeon and Pacific Lamprey, both of which are important species to the Klamath and Trinity River Indian tribes and have been negatively impacted by the construction and management of the Trinity River Division.

—Support the Native American Affairs proposed budget request and an increase of $1,000,000 for additional assistance to Indian tribes. The Reclamation Native American Affairs program has proven to be very beneficial to both the Federal Government and Indian tribes while trying to resolve inter-governmental water and fishery management issues. Without a doubt, the Native American Affairs Program has been instrumental in reducing the possibility of costly litigation and disputes between Reclamation and Indian tribes.

RESULTS ANTICIPATED

Trinity Restoration Program: Effective restoration of fisheries, critical to the Hoopa Valley and Yurok tribes and the economic stability of the fishery dependent communities of northern California and southern Oregon, would be promoted through collective actions of the Trinity Restoration Program. Identification and implementation of specific remedies and monitoring of fishery trends are expected results of Restoration Program.

While many on-the-ground achievements have already been realized, many critical elements have yet to be completed. Among the expected outcomes of the Program for 2000 is the completion of the Environmental Impact Statement to assist the Secretary with implementation of in-river flows required for full restoration of salmonid populations in the Trinity River as mandated under Public Law 102–575. The Secretary's fishery flow allocation decision, originally mandated for fiscal year 1997, was delayed due to incomplete environmental documentation. It is now anticipated that completed environmental documentation shall be available to support the Secretary's Decision expected in fiscal year 2000.

Tribal/Reclamation Co-Management Agreements and Native American Affairs Program.—The Co-Management Agreements will continue to assist in the coordination of Federal, State, Tribal and local activities (management and research) impacting salmon fisheries and salmon habitats of the Klamath and Trinity rivers. Accomplishments under this agreement in fiscal year 1997 included maintenance of data collection and analysis programs critical to the integrated management of the Klamath and Trinity fishery resources. Both Reclamation and the Tribe agree that a wise investment has been made in developing a comprehensive foundation for fishery restoration.

This foundation includes on-the-ground restoration work, assembly of scientific data on fisheries and habitat, and the coordination across multiple jurisdictions affecting salmon survival. It is now important to insure that this investment provides the desired results of a fully restored Trinity River Basin.

The General Activities Planning budget request will assist the Tribes, agencies and private interests to develop opportunities for compensating for the loss of electricity caused by increased Trinity River flows. The Green Sturgeon and Pacific Lamprey population and survival studies will provide basic information for development of long-term management programs for these species. While green sturgeon and Pacific Lamprey are important species to Indian tribes, and their maintenance is part of the Federal Government's trust obligations, lack of funding has prevented the development of management programs for these species.

CONCLUSION

The Hoopa Valley Tribe's relationship with BOR has improved significantly in recent years; however, it is clear that the fishery management problems associated with the Central Valley Project and Klamath Project operations still persist. Resolution of these issues may only be assured through the continued commitment by the Tribe and BOR to ongoing co-management of these important resources.

Again, I appreciate the opportunity to submit testimony regarding BOR's fiscal year 2001 budget. I am available to discuss these matters with you in more detail at your convenience.

Thank you.

PREPARED STATEMENT OF THE COLORADO RIVER BOARD OF CALIFORNIA

Your support and leadership are needed in securing adequate fiscal year 2001 funding for the Department of the Interior with respect to the federal/state Colorado River Basin Salinity Control Program. Congress has designated the Department of the Interior, Bureau of Reclamation to be the lead agency for salinity control in the Colorado River Basin. This successful and cost effective program is carried out pursuant to the Colorado River Basin Salinity Control Act and the Clean Water Act. California's Colorado River water users are presently suffering economic damages estimated at about $750 million per year due to the river's salinity. The potential impact of failing to move forward with the Plan of Implementation for salinity control would be to permit these damages in the Lower Basin to reach an estimated $1.25 billion annually by the year 2015.

The Colorado River Board of California (Colorado River Board) is the state agency charged with protecting California's interests and rights in the water and power resources of the Colorado River System. In this capacity, California along with the other six Basin States through the Colorado River Basin Salinity Control Forum (Forum), the interstate organization responsible for coordinating the Basin States' salinity control efforts, established numeric criteria, in June 1975, for salinity concentrations in the River. These criteria were established to lessen the future damages in the Lower Basin States as well as assist the United States in delivering water of adequate quality to Mexico in accordance with Minute 242 of the International Boundary and Water Commission. The goal of the Colorado River Basin salinity control program is to offset the effects of water resource development in the Colorado River Basin after 1972 rather than to reduce the salinity of the River below levels that were caused by natural variations in river flows or human activities prior to 1972. To maintain these levels, the salinity control program must remove 1,480,000 tons of salt loading from the River by 2015. To date, only 721,000 tons of salt load reduction have been achieved. In the Forum's last report entitled 1999 Review, Water Quality Standards for Salinity, Colorado River System released in June 1999, the Forum found that additional salinity control measures were necessary to meet the implementation plan that had been adopted by the seven Colorado River Basin States and approved by the Environmental Protection Agency. The Forum identified a "backlog" of salinity control measures which stands at 384,000 tons. This is in addition to future controls designed to lower the River's salt loading by 372,000 tons by 2015 in order to meet the established salinity standards. The Forum has presented testimony to Congress recommending that the salinity control efforts through Reclamation's Basinwide Salinity Control Program be accelerated to continue to meet the salinity standards through 2015. It has developed a plan that recommends the removal of at least 87,000 tons per year of salt loading through 2005.

The President's proposed budget for fiscal year 2001 contains only $10,850,000 for the Bureau of Reclamation's Basinwide Salinity Control Program. The Colorado River Board is pleased with the Administration's efforts, however, implementation of salinity control measures has fallen behind the needed pace to prevent salinity concentration levels from exceeding the numeric criteria adopted by the Forum and approved by the EPA. The seven Colorado River Basin states, which cost-share with the Federal Government up to 30 percent of the construction costs of Reclamation's salinity control measures, have carefully evaluated the federal funding needs of the program and have concluded that an adequate budget is needed for the plan of implementation to maintain the river salinity standards. The Forum, at its meeting in San Francisco, California, in October 1999, recommended a funding level of $17,500,000 for Reclamation's Basinwide Program to reduce the "backlog" of projects.

In addition, the Colorado River Board recognizes that the Federal Government has made significant commitments to the Republic of Mexico and to the seven Colorado River Basin states with regard to the delivery of quality water to Mexico. In order for those commitments to be honored, it is essential that in fiscal year 2001 and in future fiscal years, that Congress provide funds to the Bureau of Reclamation for the continued operation of completed projects through Operation and Maintenance funds.

The Colorado River is, and will continue to be, a major and vital water resource to the 17 million residents of southern California. Preservation of its quality through an effective salinity control program will avoid the additional economic damages to users in California.

The Colorado River Board greatly appreciates your support of the federal/state Colorado River Basin Salinity Control Program and again asks for your assistance and leadership in securing adequate funding for this program.

PREPARED STATEMENT OF THE MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY

Mr. Chairman, thank you for the opportunity today to provide this testimony for inclusion in the hearing record on the fiscal year 2001 Energy and Water Development appropriations bill. But most importantly, let me express my sincere appreciation for your continued support for the Small Reclamation Projects Loan Program, and specifically, the funding for the Salinas Valley Reclamation Project. During the past six years, this subcommittee provided $8.2 million for our project. I am pleased to report that the funds appropriated thus far have been well spent on our project, which began construction in August 1995. The new facility was dedicated in October 1997 with full operation beginning in April 1998. In calendar year 1999, the plant produced over 10,000 acre-feet (AF) of recycled water.

The project will ultimately provide 19,500 acre-feet of recycled water per year to land south and west of Castroville where abandonment of wells threatens agricultural production and the loss of a portion of rural America. It will also reduce discharge of secondary treated wastewater to the recently created Monterey Bay National Marine Sanctuary. In addition, the California State Water Resources Control Board specifically indicated its strong support for the Salinas Valley Reclamation Project in a prior letter to the U.S. Bureau of Reclamation.

The Monterey Regional Water Pollution Control Agency (MRWPCA), a joint-powers entity formed under the laws of the State of California, was created in 1971 to implement a plan that called for consolidation of the Monterey Peninsula and northern Salinas Valley wastewater flows through a regional treatment plant and an outfall to central Monterey Bay. The plan also required studies to determine the technical feasibility of using recycled water for irrigation of fresh vegetable food crops (artichokes, celery, broccoli, lettuce, and cauliflower) in the Castroville area. These studies were initiated in 1976 and included a five-year full-scale demonstration of using recycled wastewater for food crop irrigation. California and Monterey County health departments concluded in 1988 that the water was safe for food crops that would be consumed without cooking. Subsequently, the Salinas Valley Seawater Intrusion Committee voted to include recycled water in their plan to slow seawater intrusion in the Castroville area.

In addition, a supplemental water-testing program (October 1997 through March 1998) was initiated to confirm the new plant's removal of what are termed "emerging pathogens." These organisms, which include Cryptosporidium, Giardia, Cyclospora, and E. Coli, were not evaluated in the original five-year field study. The results of the follow-up testing program again verified that the water is safe for irrigation of food crops.

As in the past, we have been in close consultation with the Bureau of Reclamation and the other Small Reclamation Projects Loan Program participants in an attempt to provide the Committee with a consensus budget request that has the support of the Administration and the Loan Program participants. Based on these discussions, the Administration requested, with our support and endorsement, sufficient funding for the Salinas Valley Reclamation Project as part of the Bureau of Reclamation's Public Law 84–984 Small Reclamation Projects Loan Program for continuation of loan obligations. This appropriation amount, $0.8 million, when combined with other federal funding which is available from the U.S. Treasury pursuant to the Federal Credit Reform Act of 1990, will yield a total loan amount that we believe will meet the Federal Government's commitment for fiscal year 2001. The amount requested, when combined with the additional Treasury portion, is intended to fulfill the Bureau's eight-year loan commitment for assistance to construct the project.

As I indicated, the funding request is the result of a lengthy and complex financial agreement worked out with the other Loan Program participants and the Bureau. The agreement represents the absolute minimum annual amount necessary to continue with the project. The MRWPCA worked under the premise of accommodating the Bureau of Reclamation's budgetary constraints and is expending considerable local funds to bridge the Federal Government's budgetary shortfall. Any additional cuts in federal funding will jeopardize the complex financing plan for the project.

The MRWPCA has received Federal Grant and Loan Funds in Federal fiscal year 1995, fiscal year 1996, fiscal year 1997, fiscal year 1998, fiscal year 1999, and fiscal year 2000 through February 9, 2000, as follows:

Federal Appropriations [1]

[In millions of dollars]

	SVRP
Received:	
1995	.....
1996	2.0
1997	1.5
1998	1.3
1999	1.7
2000	1.7
Requested 2001	0.8
Total	9.0

[1] Does not include Treasury portion of $9.155 million for SVRP.

Even though the additional private debt service and bridge financing will increase the project costs, the critical problem of seawater intrusion demands that the project be continued. The Bureau of Reclamation loan is a crucial link in project funding, and it is imperative that annual appropriations continue, even at the planned reduced rate over eight years. The federal funds requested under the Public Law 84–984 program will be repaid by landowners in the Salinas Valley with assessments that are currently in place. Local funds totaling $16.3 million have already been spent getting to this point.

Mr. Chairman, we urge you and the members of the subcommittee to give your continued support to the Small Reclamation Projects Loan Program, and specifically, funding for the Salinas Valley Reclamation Project. Your support and continued assistance for this critical project is greatly appreciated.

PREPARED STATEMENT OF THE MONTEREY COUNTY WATER RESOURCES AGENCY

Mr. Chairman, thank you for the opportunity to provide testimony for inclusion in the hearing record of the fiscal year 2001 Energy and Water Development Appropriations bill. The people of the Salinas Valley in California's 17th Congressional District appreciate your willingness to accept our statements in support of the Castroville Seawater Intrusion Project. I would further like to express our deep appreciation for this Subcommittee's efforts on past Energy and Water Development Appropriations bills. I am pleased to report that the project is complete and operational and provided over 10,000 acre-feet of recycled water in calendar year 1999.

As with the past six years the Monterey County Water Resources Agency has worked diligently to present the Subcommittee with an fiscal year 2001 funding request that is supported by the Administration as well as all the other Small Reclamation Loan Program participants. Through close consultation with the Bureau of Reclamation and other Program participants, we have developed the funding plans that were included in the President's fiscal year 2001 budget for the Public Law 84–984 Small Reclamation Loan Program. I therefore respectively request that the Subcommittee provide the full Administration request for the project of $1.3 million.

This is the seventh year of an eight-year fiscal strategy designed to meet the requirements of all the projects in the Program while recognizing the fiscal constraints facing all levels of government. Originally, the Program was to provide all appropriations ($16,500,000) over a three-year period. During the past six years this Subcommittee provided $11.864 million for our project. The current appropriation amount of $1.3 million, when combined with other federal funding which is available from the U.S. Treasury in the amount of approximately$2.275 million pursuant to the Federal Credit Reform Act of 1990, should yield a total loan amount of $3.575 million for fiscal year 2001 that will allow the project to proceed on schedule.

The Monterey County Water Resources Agency (MCWRA) is a local government entity formed under the Monterey County Water Resources Agency Act. It is an agency with limited jurisdiction involving matters related primarily to flood control and water resources conservation, management, and development. The Salinas Valley is a productive agricultural area that depends primarily on ground water as a water supply. The combination of the Valley's rich soils, mild climate, and high quality ground water makes this Valley unique among California's most fertile agricultural lands and has earned the Valley the distinction as the "Nation's Salad Bowl". As agricultural activity and urban development have increased in the past forty years, ground water levels have dropped allowing seawater to intrude the coastal ground water aquifers. Seawater intrusion is extensive adjacent to the coast

near the town of Castroville. The Castroville Seawater Intrusion Project will provide 19,500 acre-feet of recycled water annually for agricultural irrigation to over 12,000 acres and help solve the seawater intrusion problem by greatly reducing groundwater pumping in the project area. The Castroville Seawater Intrusion Project is an essential component in the MCWRA's plan to deal with basin-wide ground water overdraft and seawater intrusion.

The amount requested in fiscal year 2001 when combined with the additional Treasury portion is intended to fulfill the Bureau's seventh year of an eight-year loan commitment for assistance to construct the project. As stated above, the funding request that we anticipate is the result of a lengthy and complex financial agreement worked out with the other Loan Program participants and the Bureau. The agreement recognized the tight federal budgetary constraints and represents the absolute minimal annual amount necessary to proceed with the project. The MCWRA has been extremely accommodating of the Bureau's budgetary constraints and has agreed to expend considerable local funds to bridge the Federal Government's budgetary shortfall. Any additional cuts in federal funding will jeopardize the complex financing plan for the project.

In August 1992, the original loan request was submitted to the Bureau. Subsequent approval was received from the Secretary of the Interior in May 1994. Through extensive discussion and negotiations between the MCWRA and the Bureau, a project-financing plan was created. The Bureau made it quite clear that the original provisions in the loan application of full disbursement during the three years of construction could not be met due to federal budget shortfalls. As defined in the repayment contract, the Bureau will disburse funds to the MCWRA over an eight-year period. This means that the MCWRA will receive these funds for five years after the project is operational. The fiscal year 2000 funding provided monies for the third year after completion of the project. The MCWRA had to acquire "bridge financing" to meet the needs of the Castroville Seawater Intrusion Project construction costs. Even though the additional private debt service has increased the project costs, the critical problem of seawater intrusion demanded that the project proceed. The Bureau loan is a crucial link in project funding, and it is imperative that the annual appropriations, even at the planned reduced rate over eight years, continue. Federal appropriations have been received in fiscal years 1995, 1996, 1997, 1998, 1999, and 2000 as shown in the table below and must continue in subsequent years in accordance with the negotiated agreement in order for the projects to be successful. The federal funds requested under the Public Law 84–984 program will be repaid by landowners in the Salinas Valley with assessments that are currently in place. The MCWRA has spent approximately $36.0 million of its own funds getting to this point.

Federal Appropriations [1]

[In millions of dollars]

	CSIP
Received:	
1995	1.064
1996	1.5
1997	2.0
1998	2.1
1999	2.6
2000	2.6
Requested 2001	1.3
Total	13.164

[1] Does not include Treasury portion of $13.642 million for CSIP.

Mr. Chairman, we urge you and the members of the Subcommittee to give your continued support to the Small Reclamation Program and we urge the inclusion of funds for the Castroville Seawater Intrusion Project. Without your continued support, we will not be able to realize the benefit of the work completed over the past several years and the Salinas ground water basin will continue to deteriorate, creating a significant threat to the local and state economies as well as to the health and welfare of our citizens.

Again, thank you for your support and continued assistance.

PREPARED STATEMENT OF THE MOSS LANDING HARBOR DISTRICT

Mr. Chairman and members of the subcommittee, thank you for the opportunity for me, James Stilwell, as general manager of the Moss Landing Harbor District in California to submit prepared remarks to you for the record in support of the fiscal year 2001 Energy and Water regular appropriations measure.

With the help of fiscal year 1998 emergency, and fiscal year 1999 regular, appropriations (and assistance from the Federal Emergency Management Agency) we have just completed the first operations and maintenance cycle of both the federal channel and non-federal berthing areas maintained by the district since 1993 despite three intervening declared natural disasters which left hundreds of thousands of cubic yards of additional material to be dredged and disposed of.

On the heels of this achievement, we now turn our sights on the future. No harbor district in the country has had to go though more hoops to get its harbor dredged to authorized depth. No harbor in the country should have to go through what we have gone through ever again!

Over the past year under the auspices of the San Francisco district of the Corps of Engineers, we have convened an ecological risk assessment working group to develop a consensus decisionmaking approach to reviewing options for dredged material disposal for the next scheduled operations and maintenance cycle focusing on the continued use of the nearshore SF–12 disposal site.

This working group is comprised of every state, federal and local agency with responsibility for the conduct and statutory oversight of dredging activities. The site is located within the boundaries of the Monterey Bay National Marine Sanctuary (MBNMS), including the Sanctuary, U.S. Army Corps of Engineers, San Francisco District (USACESFD), USEPA Region IX, U.S. Fish and Wildlife Service (USFWS), California Coastal Commission, California Department of Fish and Game, the Central Coast Regional Water Quality Control Board, along with representatives of related local agencies, the commercial fishing industry, public interest groups and marine research community based in the Harbor District.

The members of this working group unanimously support the request of the Harbor District for $700,000 in additional appropriations from the fiscal year 2001 operations and maintenance general account of the Corps of Engineers to complete a long term dredged material management plan and ecological risk assessment under both Corps and EPA guidance. This assessment will identify and establish a management plan for the disposal of dredged material from both the federal channel and locally maintained berthing areas for the next twenty years to avoid a repeat of the nightmare we have experienced since 1993.

Having previously determined the eligibility of using O&M general account funds for this purpose, a preliminary analysis is already underway that will establish the scope of work for the dredged material management plan and the ecological risk assessment. Part of that effort is putting the economic issue of continued federal interest in maintaining our federal channel out there for reevaluation. As the harbor is home to the largest commercial fishing fleet on the central coast of California and the largest concentration of federal, state and private marine research and millions of dollars in capital investment in vessels and facilities on the west coast, I am confident of the results of that analysis.

Anticipating the committee's fiscal concerns, we have already put our local money where our mouth is before we would request additional federal funds for this purpose! As part of voluntary local cost sharing contribution, the local sponsor has expended over $120,000 to date for sedimentary transport studies of both mud and sand and associated contaminants from various sources in the SF 12 area including the unique Monterey Bay Marine Canyon, $16,000 for the collection of sediment samples (some of which need critical testing and evaluation before their expiration), $12,000 for an extensive literature search, and $25,000 in coordinating with, and sponsoring meetings of the working group. USEPA Region IX has also contributed financially to this important endeavor providing funds for the peer review process.

We are concurrently seeking the reprogramming of in excess of $150,000 in fiscal year 2000 funds from the operations and maintenance general account of the district and Southern Pacific Division to get the management plan under way this year. The additional amounts are requested on a one-time basis to complete the plan this next fiscal year. Some of the work we expect will be done in house by the U.S. Army Corps of Engineers waterway experiment station in Vicksurg, Mississippi. All of the work will be useful to other cities, states, and port authorities across the United States as a model for collaborative effort in dredged material disposal consensus decisionmaking in unique situations such as ours. If we can resolve the thorny issues of dredged material disposal in the ecologically unique, only Submarine CANYON

and largest marine sanctuary in the United States, we can solve these problems anywhere!

This effort is intended to save current and future expenditures by providing a proven analytical and scientific framework with which to balance the costs and risks of upland and unconfined aquatic disposal of dredged material, a problem affecting ports and harbors across the nation and threatening to have an adverse impact on future Corps maintenance budgets.

In this regard, the commission recognizes and expresses its gratitude to our distinguished senator from California, the Honorable Dianne Feinstein, a member of this committee for her continuing efforts on behalf of California's ports in the Congress of the United States, and especially for her efforts in the fiscal year 1998 emergency and regular 1999 regular appropriations, in funding deferred operations and maintenance of the Moss Landing Navigation Project of critical economic importance to the commercial fishing industry, University and Private Oceanographic Research Fleet, and Monterey County in the central coast region of the State of California. We are the working port of the central coast of California!

At this time last year, we were in the throes of a dire emergency. The last complete maintenance cycle of our authorized fifteen foot channel was in 1993. Since then three declared natural disasters, the most recently being the 1998 El Niño event, left hundreds of thousands of cubic yards of silt material in our channel and berthing areas, in many instances reducing channel depth to six feet in places, and threatening navigation closure with untold economic loss to the region.

Today, with the committee's assistance, the Corps of Engineers has dredged the main channel to authorized depths. Under Corps permit we have likewise dredged our berth areas. As a result of those unprecedented three flooding events, as the innocent victim of upstream runoff of agricultural pesticide laden material, we became a downstream repository for material that initially failed testing for suitability for unconfined aquatic disposal at an historic site five hundred yards offshore. The difference between upland and aquatic disposal is between less than five dollars per cubic yard and over thirty dollars per cubic yard for either channel or berth material, prohibitively expensive to a small harbor district like ourselves.

More recent testing results have borne out that much, if not all, of our material is indeed safe for aquatic disposal within existing guidelines. We feel sufficiently certain of this, that we are willing to contribute our own limited resources to a cooperative effort in the form of a dredged material management plan. This plan calls for the Corps of Engineers to marshall the necessary scientific evidence and documentation to support a first-of-its-kind in the Nation Ecological Risk Assessment with the participation of the Corps waterway experiment station and Environmental Protection Agency scientists in this effort. We hope that the eventual report will help bring about a consensus on this issue in our local region, and serve as a model for other ports and harbors across the nation. We fully expect that the expenditure of funds for this purpose will save countless federal and local sponsor dollars in navigation and other projects nationwide.

The Corps will lead in this effort with expenditures from their operations and management, general appropriations account with the initial planning effort commencing in the current fiscal year. Most of the necessary scientific field work (sampling, testing, and evaluation) will occur in fiscal year 2000.

Concurrently, the Ecological Risk Assessment ("ERA") to be undertaken will consist of three main phases: (1) problem formulation; (2) analysis; and (3) risk characterization.

The first phase will consist of a screening ERA to identify those chemicals, ecological receptors, and exposure pathways requiring further evaluation in subsequent phases and to identify additional data needs. This phase will address elements of problem formulation, and utilizes mostly existing data.

The problem formulation phase includes the following components:

—*Data evaluation and chemical of potential concern selection*.—An evaluation of dredged material characteristics to select chemicals of potential concern for further evaluation;

—*Ecosystem characterization*.—Identification of the habitats and aquatic, wildlife, and human receptors of potential concern;

—*Conceptual ecological model development*.—An evaluation of complete and potentially complete exposure pathways (disposal characteristics), selection of indicator species (sensitive species representative of different levels of the food chain), and identification of assessment and measurement endpoints; and

—*Data gap analysis*.—Identification of data needs and studies required to complete the assessment.

Because of the nature of the Moss Landing dredged material disposal (hydraulic dredging to a highly dispersive site) and the similarities of the disposal process to

the ongoing sediment deposition to Monterey Bay from the local watershed, the initial evaluation will focus on these ongoing processes. The ongoing sediment deposition and its effects on the Monterey Bay ecosystem can provide a real-time indication of the stressor-response relationship. Existing data will be reviewed and additional data collected as deemed necessary in the data gap analysis described above.

The second phase analysis will include the following elements:

—*Watershed characterization*.—An evaluation of the sediment and chemical loading to Monterey Bay from the surrounding watershed

—*Hydrodynamic evaluation*.—An evaluation of the dispersional/depositional patterns/zones

—*Sediment characterization*.—An evaluation of sediment chemical concentrations in depositional zone(s)

—*Biota characterization*.—An evaluation of resulting biota concentrations (benthos and fish); some benthic community analysis may be conducted as well

—*Toxicity Identification Evaluation (TIE)*.—An evaluation of toxic effects and identification of toxicants

—*Exposure and effects assessments*.—An evaluation of food chain effects and an evaluation of human health effects

—*Risk characterization*.—Integration of the above elements to estimate risks.

—Uncertainty analysis.

The first phase of this evaluation will include a screening level assessment using conservative assumptions. As necessary, additional data will be collected to refine these assumptions and provide more realistic estimates of exposure and effects.

The third phase of risk evaluation will determine if no significant risks are predicted in the above evaluation. Subsequent phases of the ERA will estimate the level of additional deposition (i.e., dredged material disposal) that could occur before resulting in unacceptable risks. If significant risks are predicted in the ambient level assessment, the subsequent phases will include predicting the incremental risk from disposal of dredged material. Project deliverables will include:

—A work plan, sampling and analysis plan, and quality assurance program plan;

—Draft, draft final, and final reports; and

—A monitoring plan.

The draft report is anticipated to be released by the end of Federal fiscal year 2001. The combined field work and phase I ecological risk assessment is anticipated to cost approximately $700,000.

In the final analysis we are just a small harbor with a big problem not of our creation in search of a comprehensive solution. This subcommittee and committee took first step in funding the long overdue maintenance of our channel last year. We seem to return the favor by serving as a working laboratory for all interested parties in the future of dredging and dredged material disposal. Our location adjacent to the Monterey Bay National Marine Sanctuary, and serving as homeport to a large scientific population lends itself to this effort.

On behalf of the Harbor Commission and the commercial fishing fleet we serve, we appreciate the silent support we have had in the past reflected in your insistence in funding the operations and maintenance budget of the Corps of Engineers at a level adequate to maintain small ports like ours recognizing our unique contribution to the national economy. We look forward to appearing before this subcommittee on future occasions to provide progress reports on our Ecological Risk Assessment, and efforts to both preserve navigation and improve the environment in Moss Landing Harbor, California.

Lastly and especially we wish to recognize the efforts of departing San Francisco District Engineer, Colonel Peter Grass, for his vision, leadership and commitment, and without whose encouragement and personal involvement this historic undertaking would never have evolved. We wish him Godspeed in his next career assignment and we eagerly look forward to working with his successor to successfully complete this process.

I am prepared to supplement my prepared remarks for the record in response to any questions that the chair, subcommittee members, or staff may wish to have me answer.

Thank you Mr. Chairman and members of the subcommittee. This concludes my prepared remarks.

PREPARED STATEMENT OF THE CITY OF MORRO BAY, CALIFORNIA

During World War II the Army Corps of Engineers (ACOE) designed and constructed a new harbor entrance at Morro Bay with two rock breakwaters. Since the

initial construction, over 50 years ago, the Federal government has maintained the harbor entrance, breakwaters and navigational channels.

In fiscal year 1995 the ACOE completed the Morro Bay Harbor entrance improvement project to improve safety for commercial fishing and navigation. The City of Morro Bay was the local sponsor and contributed over $900,000 in cash and in-kind services. Morro Bay is a small city of 10,000 with very limited resources but made this project one of its highest priorities for almost 10 years because of the regional importance of the harbor. Without continued Federal maintenance, all of the past local and federal investment will be lost.

Morro Bay Harbor is the only all-weather harbor of refuge between Santa Barbara and Monterey on the West Coast. Our Harbor directly supports almost 250 home-ported fishing vessels and marine dependent businesses. We provide irreplaceable maritime facilities for both recreational and commercial interests. Businesses that depend on the harbor generate $53,500,000 annually and employ over 700 people. The United States Coast Guard (USCG) maintains a 15 person search and rescue station at Morro Bay Harbor to provide the Coast Guard services for the entire Central California Coast. Legislation has been introduced in the California legislature to designate Morro Bay and several other small ports along the California coast as "Harbors of Safe Refuge". This legislation recognizes the critical role many small harbors play in affording a safety zone for commercial and recreational vessels transiting the California coast.

Exposure to the open ocean and strong winter currents carrying sediment into the harbor create the need for a routine maintenance schedule to insure that the harbor entrance and federally designated navigation channels remain safe and navigable. It is imperative that the federally constructed navigation channels and protective jetties be maintained to insure safe commerce and navigation on a 300 mile stretch of the California Coast.

The President recommends $170,000 for dredging project engineering and design in the fiscal year 2001 budget. For the first time in four years there are no funds in the fiscal year 2001 budget recommended for the operation of the ACOE dredge Yaquina. The Yaquina dredging assures a minimum level of safety depth in the entrance of Morro Bay Harbor and we respectfully request that your distinguished subcommittee add $1.2 million in dredging funds for Morro Bay Harbor to keep our harbor open and safe in all conditions.

In addition to being home port to over 250 commercial fishing vessels, Morro Bay Harbor is part of the federally designated National Estuary Program. The Morro Bay Estuary was the subject of an ACOE reconnaissance study (funded by Congress in 1998) of potential projects to and restore sensitive habitat through improving tidal circulation. The Bay Foundation, a local non-profit conservation group, has put together a coalition to act as local sponsor for the Feasibility Phase of the Ecosystem Rehabilitation Project. We fully support the President's recommendation for $250,000 to initiate a feasibility study for this project in fiscal year 2001.

Our thanks again for your actions and continued support. I am grateful for the opportunity to present these requests to your subcommittee on behalf of the citizens of the City of Morro Bay.

Prepared Statement of the California Industry and Government Central California Ozone Study Coalition

Mr. Chairman and Members of the Subcommittee: On behalf of the California Industry and Government Central California Ozone Study (CCOS) Coalition, we are pleased to submit this statement for the record in support of our fiscal year 2001 funding request of $1 million from the Department of Energy (DOE) for CCOS as part of a Federal match for the $8.6 million already contributed by California State and local agencies and the private sector.

Ozone and particulate matter standards in most of central California are frequently exceeded. In 2003, the U.S. Environmental Protection Agency (U.S. EPA) will require that California submit SIPs to for the recently promulgated, national, 8-hour ozone standard. It is expected that such SIPs will be required for the San Francisco Bay Area, the Sacramento Valley, the San Joaquin Valley, and the Mountain Counties Air Basins. Photochemical air quality modeling will be necessary to prepare SIPs that are acceptable to the U.S. EPA.

Central California Ozone Study (CCOS) is designed to enable central California to meet Clean Air Act requirements for ozone State Implementation Plans (SIPs) as well as advance fundamental science for use nationwide. The CCOS field measurement program will be conducted in the summer of 2000 in conjunction with the California Regional PM10/PM2.5 Air Quality Study (CRPAQS), a major study of the

origin, nature, and extent of excessive levels of fine particles in central California. CCOS includes an ozone field study, a deposition study, data analysis, modeling performance evaluations, and a retrospective look at previous SIP modeling. The CCOS study area extends over central and most of northern California. The goal of the CCOS is to better understand the nature of the ozone problem across the region, providing a strong scientific foundation for preparing the next round of State and Federal attainment plans. The study includes six main components:

—Developing the design of the field study (task already underway)
—Conducting an intensive field monitoring study, scheduled for June 1 to September 30, 2000
—Developing an emission inventory to support modeling
—Developing and evaluating a photochemical model for the region
—Designing and conducting a deposition field study
—Evaluating emission control strategies for the next ozone attainment plans

CCOS is directed by Policy and Technical Committees consisting of representatives from Federal, State and local governments, as well as private industry. These committees, which managed the San Joaquin Valley Ozone Study and are currently managing the California Regional Particulate Air Quality Study, are landmark examples of collaborative environmental management. The proven methods and established teamwork provide a solid foundation for CCOS. The sponsors of CCOS, representing state, local government and industry, have contributed approximately $8.6 million for the field study. In addition, CCOS sponsors will provide $4 million of in-kind support. The Policy Committee is continuing to seek additional funding ($9.0 million) for a future deposition study, data analysis, and modeling. California is an ideal natural laboratory for studies that address these issues, given the scale and diversity of the various ground surfaces in the region (crops, woodlands, forests, urban and suburban areas).

There is a national need to address national data gaps and California should not bear the entire cost of the addressing these gaps. National data gaps include issues relating to the integration of particulate matter and ozone control strategies. The CCOS field study will take place concurrently with the California Regional Particulate Matter Study—previously jointly funded through Federal, State, local and private sector funds. Thus, CCOS is timed to enable leveraging of the efforts for the particulate matter study. Some equipment and personnel can serve dual functions so that CCOS is very cost-effective. From a technical standpoint, carrying out both studies concurrently is a unique opportunity to address the integration of particulate matter and ozone control efforts. CCOS will also be cost-effective since it builds on other successful efforts including the 1990 San Joaquin Valley Ozone Study. To effectively address these issues requires federal assistance and CCOS provides a mechanism by which California pays half the cost of work that the Federal Government should pursue.

For fiscal year 2001, our Coalition is seeking funding of $1 million in fiscal year 2001 from Department of Energy (DOE).—Energy Commission is a key participant, having contributed $3 million. Consistent with the recently signed memorandum of understanding between the California Energy Commission and the DOE, joint participation in the CCOS will result in: (1) enhanced public interest energy research, development, and demonstration programs; (2) increased competitiveness and economic prosperity in the United States; and (3) further protection of the environment through the efficient production, distribution and use of energy.

Particularly in light of the latter goal, the oil and agricultural sectors in California have been working jointly for several years to identify innovative partnerships and programs that address how changes in those sectors can cost-effectively reduce particulate matter and ozone-related emissions. The Department of Energy has also been a participant in many of those programs. In addition, the oil and agricultural sectors in California have been aggressively pursuing demand-side services in order to lower energy consumption, which in turn further reduces the cost of electricity, typically the most significant cost associated with production in California. The demand-side actions will also have the impact of reducing air quality emissions.

The CCOS program in California has reached a crossroad where the next level of studies and research will help identify the most cost-effective means of controlling or reducing emissions. Energy efficiency options such as improving oil field equipment and water pumping efficiency, as well as agricultural energy management, can play a major role in this approach. Not only will these be critical options to reduce emissions, while producing economic benefits and helping stabilize local economies, they will also be effective in other parts of the nation.

By becoming a partner in this program DOE will be furthering its own goals, as addressed in their "Initiatives for Energy Security", of aiding domestic oil producers to enhance their environmental compliance while reducing their costs. The program

will further DOE's goals of identifying cost-effective energy efficiency and management practices. The work in California also can pave the way for furthering the pilot program of the National Association for State Energy Officials in addressing oil producer energy efficiency.

Thank you very much for your consideration of our request.

PREPARED STATEMENT OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Chairman Domenici: the Metropolitan Water District of Southern California (MWD) is pleased to submit the enclosed testimony for the record, regarding programs contained in the U.S. Bureau of Reclamation's and the Army Corps of Engineers' Fiscal-Year 2000 budget for your Subcommittee's hearing record.

MWD strongly recommends your approval of a Reclamation fiscal year 2001 budget that includes funding for San Francisco Bay-Sacramento/San Joaquin Delta Estuary restoration activities, as requested in the President's budget. We also recommend your approval of the full budget request for Corps participation in these Delta restoration activities. MWD urges your support for additional federal funding for Reclamation's Colorado River Basin Salinity Control Program. MWD requests that Congress appropriate $17.5 million, $6.65 million over the President's budget, for implementation of the basinwide program that will ensure protection of water quality for this important source of water supply. MWD also urges your support for Reclamation's Endangered Species Conservation/Recovery projects that will provide for conservation of endangered and threatened species and habitat along the lower Colorado River, and provide mitigation for impacts associated with Reclamation's projects. MWD requests an additional $1 million for the Lower Colorado River Ops program. MWD urges your full support for Reclamation programs that will help stretch existing water resources, such as water reclamation and groundwater recovery projects for Southern California agencies. Finally, MWD urges your support of funding necessary to begin the environmental work required to remove the radioactive tailings in Moab, Utah. These programs are essential for regional water supply reliability We look forward to working with you and your Subcommittee. Please contact Brad Hiltscher, MWD's Legislative Representative in Washington, D.C. at (202) 296–3551, if we can answer any questions or provide additional information.

Chairman Domenici and members of the subcommittee: The Metropolitan Water District of Southern California (MWD) appreciates the opportunity to submit testimony regarding the U.S. Bureau of Reclamation's (Reclamation) and the Army Corps of Engineers' (Corps) fiscal year 2001 budget, for the Hearing on Energy and Water Appropriations. MWD is a public agency created in 1928 to meet the supplemental water demands of those people living in what is now portions of a six-county region of Southern California. Today, the region served by MWD includes 16 million people living on the coastal plain between Ventura and the international boundary with Mexico. It is an area larger than the State of Connecticut and, if it were a separate nation, would rank in the top ten economies of the world. Included in our region are more than 225 cities and unincorporated areas in the counties of Los Angeles, Orange, San Diego, Riverside, San Bernardino, and Ventura. We provide more than half the water consumed in our 5,200-square-mile service area. MWD's water supplies come from the Colorado River via the district's Colorado River Aqueduct and from northern California via the State Water Project's California Aqueduct.

INTRODUCTION

Our testimony focuses on Reclamation's water resources management and ecosystem restoration programs that are of major importance to MWD and other Southern California water supply agencies. Specifically, MWD strongly recommends your approval of a Reclamation fiscal year 2001 budget that includes funding for San Francisco Bay-Sacramento/San Joaquin Delta Estuary restoration activities. We also recommend your approval of the full budget request for Corps participation in these Delta restoration activities. MWD urges your support for adequate federal funding for Reclamation's Colorado River Basin Salinity Control Program that will ensure protection of water quality for this important source of water supply. MWD also urges your support for Reclamation's Endangered Species Recovery Implementation projects that will provide for conservation of endangered and threatened species and habitat along the lower Colorado River. MWD also strongly urges your full support for Reclamation's Lower Colorado River Operations Program that will greatly advance completion of environmental documentation for several new initiatives needed by Arizona, California, and Nevada. MWD urges your full support for Reclamation programs that will help stretch existing water resources, such as water reclamation

and groundwater recovery projects for Southern California agencies. We urge your support for funding desalination and water recycling research. Finally, MWD urges your support of funding necessary to begin the environmental work required to remove the radioactive tailings in Moab, Utah. These programs are essential for regional water supply reliability.

U.S. BUREAU OF RECLAMATION BUDGET

California Bay-Delta Ecosystem Restoration and Water Security

The San Francisco Bay-Delta Estuary serves as the hub of California's water system, fueling the State's $750 billion economy, supplying more than two-thirds of the State's 33 million residents with a portion of their drinking water and irrigating 45 percent of the nation's produce. Federal money for the Bay-Delta funds an array of critical improvements, including habitat restoration, watershed protection, fishery enhancement, water supply reliability and water quality improvement. Recognizing the importance of the Bay-Delta to California's economic and environmental health, the California voters approved a $1 billion general obligation water bond in November 1996 and a $2 billion bond in March 2000. These bonds contain monies for ecosystem restoration, watershed protection, water supply and water quality improvement, flood control, and conservation and recycling.

In 1996, Congress passed the California Bay-Delta Environmental Enhancement and Water Security Act, which authorized $430 million over three years for ecosystem restoration and water management improvements in the Bay-Delta Estuary. Since 1996 Congress has appropriated $220 million, or approximately 50 percent of the original authorization. In fiscal year 2000, $60 million was appropriated for the Bay-Delta Estuary ($30 million for ecosystem and $30 million for non-ecosystem activities). For fiscal year 2001, the Administration requested $60 million ($36 million for ecosystem and $24 million for non-ecosystem activities). Metropolitan strongly urges you continue the balanced 50/50 split between ecosystem and non-ecosystem activities and support the $60 million in total funding requested by the Administration.

Colorado River Basin Salinity Control

The Colorado River is a large component of the regional water supply and its relatively high salinity causes significant economic impacts on water customers in MWD's service area, as well as throughout the Lower Colorado River Basin. MWD and the Bureau of Reclamation completed a Salinity Management Study for Southern California in 1999. The study concluded that the high salinity from the Colorado River causes significant impacts to residential, industrial and agricultural water users. Furthermore, high salinity adversely affects the region's progressive water recycling programs, and is contributing to an adverse salt buildup through infiltration into Southern California's irreplaceable groundwater basins. In 1999, Metropolitan's Board of Directors authorized implementation of a comprehensive Action Plan to carry out Metropolitan's policy for management of salinity. The Action Plan focuses on reducing salinity concentrations in Southern California's water supplies through collaborative actions with pertinent agencies, recognizing that an effective solution requires a regional commitment. Based on a 1988 study, Reclamation estimated that water users in the Lower Basin were experiencing in excess of $750 million in annual impacts from salinity levels in the river in 1995, and that impacts would progressively increase with continued agricultural and urban development upstream of California's points of diversion. As part of the Salinity Management Study, the economic impacts have been refined for MWD's service area and have been submitted to Reclamation for its use in updating its Lower Basin estimate. Droughts will cause spikes in salinity levels that will be highly disruptive to Southern California water management and commerce. The Salinity Control Program has proven to be a very cost-effective approach to help to mitigate the impacts of higher salinity. Continued federal funding of the program is essential.

The Colorado River Basin Salinity Control Forum (Forum), the interstate organization responsible for coordinating the Basin states' salinity control efforts, issued its 1999 Review, Water Quality Standards for Salinity, Colorado River System (1999 Review) in June 1999. The 1999 Review found that additional salinity control was necessary beginning in 1994 to meet the numeric criteria in the water quality standards adopted by the seven Colorado River Basin states and approved by the U.S. Environmental Protection Agency, with normal water supply conditions. For the last five years, federal appropriations for Reclamation have not equaled the Forum-identified funding need for the portion of the program the Federal Government has the responsibility to implement. It is essential that implementation of Reclamation's basinwide salinity control program be accelerated to permit the numeric criteria to

be met again under average annual long-term water supply conditions, making up the shortfall. To assist in eliminating the shortfall, the Forum once again recommends that Reclamation utilize upfront cost sharing from the Basin states to supplement federal appropriations. This concept has been embraced by Reclamation and is reflected in the President's proposed budget.

The President's proposed fiscal year 2001 budget contains funding of $10.85 million for implementation of the basinwide program. MWD requests that Congress appropriate $17.5 million for implementation of the basinwide program. This level of funding is necessary to meet the salinity control activities schedule in order to maintain the state adopted and federally approved water quality standards. The Forum supports this level of funding. MWD as well as the Forum supports the level of funding proposed by the President for operation and maintenance of the salinity control units already constructed, and investigations.

Endangered Species Recovery Implementation and Lower Colorado River Operations Program

MWD is presently engaged in an innovative partnership with Reclamation and other Department of the Interior agencies, as well as other water, power, and wildlife agencies, and Indian Tribes in the states of Arizona, California, and Nevada, to develop a multi-species conservation program for the Lower Colorado River. The program will address the conservation, enhancement, and recovery needs of a broad suite of more than 70 listed and sensitive species and their associated aquatic, wetland, and riparian habitats in the three states, while providing long-term regulatory certainty for all parties. An effort of this nature can only succeed through the development of innovative voluntary public-private partnerships.

The President's budget requests $12.179 million for fiscal year 2001 to fund programs under the "Endangered Species Recovery Implementation" activity and $13.729 million to fund programs under the "Lower Colorado River Ops Program" (LCROP) activity. Included in the former amount are funds to support preservation, conservation, and recovery of native and endangered, threatened, proposed, and candidate species in the Lower Colorado River region. Included in the latter amount are funds to implement measures required by the interim biological opinion on Reclamation's lower Colorado River operations, and develop the multi-species conservation program. MWD strongly supports funding at the requested level for both programs, and requests your support for an additional $1 million under the LCROP (for a total of $14.72 million) to accelerate the preparation of environmental documentation for Reclamation/State initiatives of critical importance to Arizona, California, and Nevada.

National Fish and Wildlife Foundation

The National Fish and Wildlife Foundation (Foundation) facilitates implementation of fish and wildlife mitigation and enhancement programs associated with Reclamation's projects through cost-sharing partnerships with local, state, tribal, and/or nongovernmental organizations. The Foundation is able to leverage federal dollars on at least a 1:1 matching basis. The Foundation's support for programs like the Lower Colorado River Multi-Species Conservation Program is extremely important to the development of comprehensive solutions to these complex endangered species issues. An effort of this nature can only succeed through the development of innovative voluntary public-private partnerships. The President's budget requests $1.3 million for fiscal year 2001, which anticipates a two dollar nonfederal match for each federal dollar. MWD strongly supports the President's requested level of funding.

Water Recycling, Groundwater Recovery and Water Conservation

Projects funded under Title XVI of the Reclamation Projects Authorization and Adjustment Act of 1992 (Public Law 102–575) and the Reclamation Recycling and Water Conservation Act of 1996 (Public Law 104–266) as well as the Bureau's Loan Program will greatly improve Southern California's water supply reliability and the environment through effective water recycling and recovery of contaminated groundwater. MWD expects to contribute about $17.4 million in fiscal year 2001 to recycled water and groundwater recovery projects in the region, and the State is assisting with low-interest loans. Funding in the fiscal year 2001 budget for previously unfunded projects as well as the continued support for previously-funded projects is a positive step toward realizing regional water supply reliability. The Bureau of Reclamation's budget request for research into the technologies and science of water recycling is another vital step toward making water reuse a viable alternative for communities faced with limited water supplies. MWD urges your full support for the $22 million for Title XVI and $9.4 for the Loan Program in the President's fiscal year 2001 budget, as well as future funding for all Southern California projects that

might move forward under the jointly-funded Southern California Comprehensive Water Reclamation and Reuse Study. Finally, MWD supports the President's request for $3.169 million in funding for the Bureau's Efficiency Incentives Program. Federal cost sharing and other assistance for innovative water efficiency improvements by urban and agricultural water districts is appropriate.

Brackish Water Desalination

Metropolitan requests federal funding for desalination activities aimed at developing new and innovative technologies. Technologies to be investigated include innovative pretreatment options such as nanofiltration, ultra low pressure reverse osmosis membranes and ultra violet (UV) light technology for disinfection and oxidation. Brackish water desalination represents a potentially viable alternative water source to reduce reliance on imported water supplies and minimize the economic impact associated with high salinity water. Current salinity removal technologies are energy-intensive and expensive. Treating Colorado River water to the secondary total dissolved solids (TDS) standard of 500 milligrams/liter, using conventional membrane technology, can cost $300 or more per acre-foot. These high costs have precluded the widespread implementation of brackish water desalination technologies, especially for large scale applications. Breakthroughs in desalination technology will offer potential benefits to water utilities with sources impaired by high salinity levels. It is estimated that $3 million will be required to continue this research being sponsored by Metropolitan and its member agencies.

DEPARTMENT OF ENERGY

removal of Radioactive Tailings in moab, utah

For 28 years the Atlas Corporation processed uranium ore for the military and other government uses from its privately owned mill in Moab, Utah. When it closed in 1984, the company left a 10.5 million ton pile of radioactive tailings which is now 110 feet high and covers 130 acres. It is estimated that the mountain is leaking 28,000 gallons of radioactive fluid into the Colorado River each day. While not a serious problem yet, this situation could pose a serious threat to California's drinking supply as uranium is a proven human carcinogen. The Department of Energy has requested $10 million for the environmental work necessary to implement the Memorandum of Understanding between the Department of Energy, Department of the Interior and the Ute Indian tribe on remediating the Moab issue. Metropolitan urges Congress to appropriate such amount as it determines necessary in fiscal year 2001.

ARMY CORPS OF ENGINEERS

The Army Corps of Engineers' (Corps) comprehensive civil works program has the capability to contribute to the social, economic, and environmental well-being of California. MWD is primarily interested in the Corps' environmental restoration studies and projects that address the needs of the Bay-Delta Estuary. The President's proposed fiscal year 2001 budget includes numerous programs in the Corps' South Pacific Division, which includes California. Several ecosystem restoration studies and projects specifically address significant habitat issues at various locations in the Bay-Delta watershed. Corps programs that will contribute to the long-term Bay-Delta solution include environmental restoration studies in the Sacramento and San Joaquin River watersheds, habitat conservation and mitigation elements of flood damage prevention projects, and ecosystem restoration programs. MWD urges Congress to fully support these Corps programs as the fiscal year 2001 federal appropriations process moves forward.

Thank you for your consideration of our testimony. We believe our comments emphasize the importance of continued funding for Reclamation and Corps' water resources management and ecosystem restoration programs that are critical for water supply reliability in Southern California.

PREPARED STATEMENT OF CONTRA COSTA COUNTY, CALIFORNIA

SAN FRANCISCO TO STOCKTON, CALIFORNIA SOUTHAMPTON SHOAL CHANNEL DEEPENING PROJECT

The Southampton Shoal Channel with the San Francisco Bar Channel, form the entrance into the San Francisco Bay and Delta, providing foreign and domestic deep draft merchant, military, commercial fishing and other vessel access to ports within the region. Changing deep draft vessel operations and design requires deepening the −45 foot Southampton Shoal channel to −50 feet. Deepening the Southampton

Shoal Channel will provide safer and more efficient navigation of oil tankers entering the bay by allowing vessels to be loaded more fully, which will require fewer vessel trips to deliver the same amount of cargo. In addition, deepening of the Southampton Shoal Channel to −50 feet will allow heavily laden vessels to proceed directly to off-loading facilities, rather than lightering (off loading) onto smaller ships at open water anchorages in south San Francisco Bay.

FUNDING REQUEST

Contra Costa County requests that funding of $100,000 be added to the Federal fiscal year 1999 budget to allow the Army Corps of Engineers to revise early work on project studies to reflect changes in scope and design of the Southampton Project which accommodate recent changes in operations and other regulatory requirements of industry located within Contra Costa County, the Project's Local Sponsor. Therefore the County, as Local Sponsor, is requesting an fiscal year 2001 Budget allocation of $100,000 to complete work prior to entering the Feasibility phase of the Project.

PURPOSE OF FUNDING

Funding will be utilized to allow revision of project scope and content, prior to moving ahead into the Feasibility phase of the project. Significant changes have occurred with industry operating within the County, in turn affecting ship channel traffic, vessel size, and scope and content of the Southampton Project. The Southampton Project will be redesigned to reflect these changes, and a revised cost/benefit prepared for the project by the Army Corps of Engineers. Redefining the Project is necessary prior to entering into the Feasibility Phase, which is expected to occur upon completion of the above-mentioned revisions to the Project.

PREPARED STATEMENT OF LOS ANGELES COUNTY BOARD OF SUPERVISORS

Chairman Domenici, Los Angeles County respectfully requests that the Congress of the United States include funds in the fiscal year 2001 Energy and Water appropriations bill for the following U.S. Army Corps of Engineers studies and Marina del Rey dredging.

Coast of California Storm and Tidal Wave Study—Los Angeles County ($500,000).

Los Angeles County has over 30 miles of public beaches, serving over 50 million visitors annually. The 1998 impact of California's beaches on the national economy has been estimated by San Francisco State University, at $73 billion. Direct Federal taxes are estimated at $2.6 billion, with total tax revenues reaching $14 billion. California's beaches create 883,000 jobs nationwide. Yet, California receives only $12,000 Federal dollars per mile of coastline, compared to $800,000 per a mile in New York and New Jersey.

Los Angeles County's beaches contribute a disproportionate share to the economic benefits described above. Its beaches are not naturally sandy, however, having 35 million cubic yards of sand placed on them since the 1930s. The County's beaches provide recreational opportunities for many more millions than visit our National Parks. They also provide protection from ocean storms for major highways, utilities, public improvements and private property.

Los Angeles County formed a multi-agency Beach Replenishment Task Force in 1998. Its goal is to establish a long-term management plan for the beaches. The U.S. Army Corps of Engineers' Coast of California Study is critical to the achievement of this goal, as it is designed to assess long-term shoreline changes along the Los Angeles County coastline based on actual field data and predictive numerical models. It will also provide critical coastal processes information to plan and design future shore protection and beach nourishment projects.

In response to last year's request from Los Angeles County, Congress added $100,000 to the fiscal year 2000 budget to fund the reconnaissance phase of this study. The timing of this study precluded the Corps from requesting its funding in the President's fiscal year 2001 budget. Therefore, your support for an additional appropriation, of $500,000, in fiscal year 2001 is requested for continuation of this very important study.

Marina del Rey and Ballon Creek Feasibility Study ($500,000)

For the past five years Congress has funded the federal share of this study and the County has provided the required local sponsor's share. The study was scheduled to be completed in fiscal year 2000. Its goal was to develop a dredged material management plan for Marina del Rey's contaminated sediments, as well as a sedi-

ment control plan within the Ballon Creek watershed. To meet the objectives of this study, it is now necessary to extend the study for two years for development of a trash and debris management plan.

Trash and debris in Ballona Creek and Marina del Rey have the potential to impede sediment removal and control; therefore, the removal and management of trash and debris must be addressed. Without this study, and its resultant plan, other mitigation measures and improvements will not be effective. Completion of this study, and implementation of the plan, will not only facilitate optimum sediment removal and control, it will also improve water quality in the Santa Monica Bay. Unfortunately, the scope of work for this study was not developed in time for its funding to be included in the President's fiscal year 2001 budget. We, therefore, request your support for the addition of $500,000 to the fiscal year 2001 budget for this critical work.

Los Angeles County—Regional Dredged Material Management Plan ($400,000)

It is estimated that approximately 2.5 million cubic yards of contaminated marine sediments will need to be dredged from the harbor waters of Los Angeles County over the next five years. Unfortunately, permanent sites for the disposal of these sediments are not available. As a result, routine maintenance dredging and port expansion activities have been critically hampered, impeding both navigational safety and the livelihood of the area's economy. In addition, the continuous buildup of contaminated sediments within the Los Angeles Region's coastal waterways raises concerns with respect to potential impact to the public health and the health of the marine environment.

A multi-agency task force, funded largely by the State of California, the Ports of Los Angeles and Long Beach, and the County of Los Angeles, was established in 1997 to develop a long-term management strategy for dredging and disposal of the region's contaminated sediments. The U.S. Army Corps of Engineers is a critical participant in this process and this study will enable the task force to achieve its goal. Without the completion of this study, the region's contaminated sediment problems will not be solved. Safe navigation in small craft harbors will be jeopardized by shoaling that cannot be removed and disposed of safely and economically, and the nation's largest port complex will not be able to grow to meet increased demand.

Responding to request from Los Angeles County last year, Congress added $100,000 to the fiscal year 2000 budget for the reconnaissance phase of this study. While the President's budget for fiscal year 2001 does contain $225,000 for continuation of this study, the reconnaissance phase has developed an aggressive study plan that will require $400,000 in Federal funding for fiscal year 2001. Therefore, your support for an additional $175,000 in fiscal year 2001 is respectfully requested.

Marina del Rey Dredging ($5,335,000)

With nearly 6,000 slips, Marina del Rey is the largest, man-made small craft harbor in the nation. The Marina is also the homeport for the Coast Guard cutter, Point Bridge, and other rescue agencies that respond to air-sea disasters off of LAX. The safe navigation of the harbor's entrances is needed to provide for the safety of thousands of boaters who use the Marina annually and to enable prompt emergency response to a variety of life-threatening ocean emergencies.

In the last two years, Congress has appropriated a total of $5 million, which has been combined with nearly $4 million in County funds, to take advantage of an extraordinary opportunity to remove 300,000 cubic meters of contaminated sediment. The contaminated material has been permanently and safely disposed of in a landfill project in the Port of Long Beach. In addition, approximately 200,000 cubic meters of clean sand have been taken from the Marina to replenish a badly eroded, but very heavily used, public beach.

The President's budget for fiscal year 2001 includes $5,335,000 for dredging in Marina del Rey. The County and Corps are planning on using these funds to further improve navigational safety, test methods for remediating contaminated sediment for beneficial reuse, and constructing measures that will reduce shoaling and future dredging costs. We, therefore, ask your support of the President's budget request of $5,335,000 for fiscal year 2001.

The U.S. Army Corps of Engineers' excellent execution of its Congressionally mandated missions—creating and maintaining safe navigation channels, flood control, and shoreline protection—make it an invaluable partner in Los Angeles County. Your continued support of appropriations for these missions is critical and very much appreciated by Los Angeles County.

PREPARED STATEMENT OF THE VENTURA PORT DISTRICT

The Ventura Port District respectfully requests that the Congress:

—Include $2,240,000 in the fiscal year 2001 Energy and Water Development Appropriations Bill as requested by the Administration for the U.S. Army Corps of Engineers maintenance dredging of the Ventura Harbor federal channel and sand traps.

—Add $1,500,000 to the fiscal year 2001 Energy and Water Development Appropriations Bill for the U.S. Army Corps of Engineers to repair the serious structural damage to the north head of the Federal Breakwater at Ventura Harbor.

—Include $400,000 in the fiscal year 2001 Energy and Water Development Appropriations Bill as requested by the Administration to continue a cost shared Feasibility Study to determine the advisability of modifying the existing Federal navigation project at Ventura Harbor to include a sand bypass system.

BACKGROUND

Ventura Harbor, homeport to 1500 vessels, is located along the Southern California coastline in the City of San Buenaventura, approximately 60 miles northwest of the City of Los Angeles. The harbor opened in 1963. Annual dredging of the harbor entrance area is usually necessary in order to assure a navigationally adequate channel. In 1968, the 90th Congress made the harbor a Federal project and committed the U. S. Army Corps of Engineers to provide for the maintenance of the entrance structures and the dredging of the entrance channel and sand traps.

The harbor presently generates more than $40 million in gross receipts annually. That, of course, translates into thousands of both direct and indirect jobs. A significant portion of those jobs are associated with the commercial fishing industry (over 25 million pounds of fish products were landed in 1999), and with vessels serving the offshore oil industry. Additionally, the headquarters for the Channel Islands National Park is located within the harbor, and the commercial vessels transporting the nearly 100,000 visitors per year to and from the Park islands offshore, operate out of the harbor. All of the operations of the harbor, particularly those related to commercial fishing, the support boats for the oil industry, and the visitor transport vessels for the Channel Islands National Park are highly dependent upon a navigationally adequate entrance to the harbor.

OPERATIONS & MAINTENANCE NEEDS

Dredging

The Corps of Engineers has determined that $2,240,000 will be required to perform routine maintenance dredging of the harbor's entrance channel and sand traps during fiscal year 2001. This dredging work is absolutely essential to the continued operation of the harbor.

Breakwater Repairs

It is estimated that $1,500,000 will be required during fiscal year 2001 for the Corps of Engineers to repair extensive storm damage to the north head of the Federal Breakwater. This structure is a critical component of the harbor's entrance system and its repair must be accomplished expeditiously in order to assure that the integrity of the balance of the 1800-foot structure is not compromised. Delaying the necessary repairs will not only rapidly escalate the repair cost for the breakwater itself but will also result in increased maintenance dredging costs in subsequent years.

STUDY NEEDS

The Corps of Engineers has determined that $400,000 will be required during fiscal year 2001 to continue a cost shared Feasibility Study to determine the advisability of modifying the existing Federal navigation project at Ventura Harbor to include a sand bypass system. Given the continuing need for maintenance dredging, it is appropriate to determine if a sand bypass system or other measures can accomplish the maintenance of the harbor in a manner that is more efficient and cost effective than the current contract dredging approach.

PREPARED STATEMENT OF THE CITY OF RANCHO PALOS VERDES, CALIFORNIA

As your distinguished Subcommittee writes the fiscal year 2001 Energy and Water Resources Appropriations bill, I would like to bring a very important environmental restoration project to your attention.

The Corps of Engineers and the City of Rancho Palos Verdes have been working on a cost-sharing feasibility study to investigate Federal improvements to restore pristine environmental areas along the Pacific coastline since 1995. The Presidents fiscal year 2001 Budget Request does not contain enough money to perform both pre-construction design and modeling tasks.

I would like to take this opportunity to request that your distinguished Subcommittee include $325,000 in the fiscal year 2001 Budget Request for the continuation of the pre-construction engineering and design. The addition of $125,000 to the proposed budget will allow the modeling to take place in conjunction with preliminary engineering. The City of Rancho Palos Verdes is prepared to commit their portion of the cost-share to complete the study next year.

The area along the Rancho Palos Verdes coastline that is being studied has been severely degraded as a result of landslide movement of material and coastal erosion causing sediment and continuous turbidity that has buried sensitive habitat. The Study involves investigations to define landslide and erosion relationships, impacts on the environment and potential restoration benefits. This project should be considered as essential mitigation for large local port projects.

Thank you for the opportunity to submit this request.

PREPARED STATEMENT OF THE SANTA CRUZ HARBOR

Santa Cruz Harbor is an active small craft harbor at the north section of Monterey Bay, California. It was authorized as a federal navigation project in 1958, constructed in 1964, and expanded in 1972. A 1986 joint-venture between the U.S. Army Corps of Engineers and the Santa Cruz Port District provided for a permanent sand bypass system to solve the ocean-driven shoaling problem at its entrance. The Port District has successfully operated that system for the past fourteen winters. However, the Port District has been unable to solve the siltation problem emanating from the three-square mile watershed which terminates at the north end of Santa Cruz Harbor.

Silt from Arana Gulch fills berths, fairways, and channels in the harbor, making them hazardous and unusable. At this time, the siltation is not solvable by the existing sand bypass system. The soil characteristics of the watershed make beach disposal impractical at this time. Arana Gulch sediment must either be taken upland or delivered by barge offshore—both of these disposal options are quite wasteful. They are also extremely expensive and cost the Port District hundreds of thousands of dollars each year. Additionally, the 1998 El Niño storms brought 15,000 cubic yards of material into the north harbor alone from Arana Gulch. The event was declared a federal disaster, and FEMA and the State of California are spending in excess of $500,000 to return the harbor to charted depths.

On June 25, 1998, the House Committee on Transportation and Infrastructure passed Resolution Docket 2565 authorizing the Secretary of the Army to review the Arana Gulch watershed siltation problem.

The Port District respectfully requests that $100,000 be appropriated for the Arana Gulch reconnaissance study for fiscal year 2001.

PREPARED STATEMENT OF THE CITY OF SAN RAFAEL, CA

Chairman Domenici: Periodic maintenance dredging of San Rafael Canal is necessary because it is an important and valuable element of our community's infrastructure.

It serves as a flood control channel for central San Rafael, draining approximately five square miles where 25,000 residents and businesses reside.

The San Rafael Canal is important to the boating interests. There are five yacht harbors that provide berthing for over 750 vessels. While these facilities are primarily recreational, there are commercial benefits in the form of sales tax revenue generated from purchases made in ships' chandleries, vessel repair yards, fueling facilities, supermarkets and employee compensation.

Over $10 million in revenue is generated by the 25 marine related commercial interests that rely on the San Rafael Canal for their livelihood. These commercial enterprises generate fees, sales taxes, and employment to 65 individuals. These enterprises are divided into the following categories: yacht harbors (5), vessel inspection, maintenance and repair (14), storage (3), vessel sales (3), commercial fishing (4), and commercial freight hauling (1). The continued viability and operation of these businesses requires that the San Rafael Canal receive the necessary appropriations to allow the U.S. Army Corps of Engineers to perform the overdue maintenance dredging.

Lastly, the City of San Rafael maintains and operates a fire and search and rescue vessel in the San Rafael Canal and in the lower portion of San Pablo Bay. This operation became vital when the Coast Guard no longer provided these services over 10 years ago. This vessel is berthed in the Canal and must be able to respond to emergencies without having to wait for high tide. In the past year, this vessel has responded to 100 calls for emergency response, has rescued 215 people who required assistance, and has prevented approximately $6 million in damage to vessels in need of emergency response.

The San Rafael Canal is much more than a recreational amenity. It supports a healthy and thriving marine oriented business community. It supports the employment of individuals and generates revenue to the City of San Rafael. It provides for public safety on the water.

We understand that the appropriation to fund the maintenance dredging is not in the President's budget. We understand that the Corps of Engineers has estimated that it needs $1.8 million to perform the maintenance dredging. The San Rafael City Council, as well as the business enterprises who rely on the San Rafael Canal for their livelihood, urgently request your consideration to appropriate these funds to the Corps of Engineers to perform the much needed maintenance dredging of San Rafael Canal.

PREPARED STATEMENT OF THE CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

Presented herewith is testimony in support of $28,000,000 for the construction appropriation necessary for the U.S. Army Corps of Engineers to continue the Tropicana and Flamingo Washes flood control project and testimony in support of $1,584,000 appropriation to reimburse the non-federal sponsors, Clark County and the Clark County Regional Flood Control District, for work performed in advance of the federal project pursuant to Section 211 of the Water Resources Development Act (WRDA) of 1996. This project is located in the rapidly growing Las Vegas Valley in Southern Nevada.

The Las Vegas Valley continues to experience unprecedented growth. This growth has occurred over the past twenty plus years. People have moved into the area from all parts of the nation to seek employment, provide necessary services, retire in the Sunbelt, and become part of this dynamic community. It is estimated that 5,000 people relocate to the Las Vegas Valley every month of the year. Currently the population is over 1.3 million. The latest statistics show that more than 30,000 residential units are built annually. Once all of these factors are combined, the result is that the Las Vegas Valley continues to be one of the fastest growing areas in the nation.

The Federal project being constructed by the Corps of Engineers (Corps) is designed to collect flood flows from a 160 square mile contributing drainage area. The Corps project includes four debris basins, four detention basins, 28 miles of primary channels, and a network of lateral collector channels. The debris basins are designed to collect flood flows from undeveloped areas at the headwaters of the alluvial fans and trap large bedload debris before it enters the channels and causes erosion damage. The detention basins will function to greatly reduce the magnitude of the flood flows so that the flows can be safely released and conveyed through the developed urbanized area at non-damaging rates. The outflow from the debris basins and the reduced flows from the detention basins will be contained in the primary channel system that will also serve as outfalls for the lateral collector channels. While this latter element (lateral collector channels) is considered to be a non-federal element of the entire plan, it is a necessary element for the plan to function properly and afford flood protection for the community. Since flood flow over the alluvial fans, which ring the Las Vegas Valley, is so unpredictable in terms of the direction it will take during any given flood all of the components of the Corps' plan are critical.

Torrential rains deluged the Las Vegas Valley the morning of July 8, 1999, causing widespread drainage problems and major damages to public and private properties. Some of the largest rainfall depths occurred over the southwest portions of the Las Vegas Valley resulting in significant flows in the Tropicana and Flamingo Washes. The runoff that resulted from this intense rainfall caused widespread street flooding and record high flows in normally dry washes and flood control facilities. The news media reported two deaths resulting from this flood event, one of which was a drowning in the Flamingo Wash. Damages to public property resulting from this storm are estimated at $20,500,000. President Clinton declared Clark County a federal disaster area on July 19, 1999, recognizing the severity of damages to public and private properties. Significant damages could have been avoided if the Corps'

Tropicana and Flamingo Washes Project had been fully implemented. However, those features of the Corps' project that were completed worked to mitigate damages. The storm of July 8, 1999, further reemphasizes the need to expeditiously implement all flood control projects in the Las Vegas Valley.

The Feasibility Report for this project was completed in October 1991, and Congressional authorization was included in the WRDA of 1992. The first federal appropriation to initiate construction of the project became available through the Energy and Water Resources Development Appropriations Bill signed into law by the President in October 1993. The Project Cooperation Agreement (PCA) was fully executed in February 1995. Federal appropriations to date have totaled $87,700,000, allowing the project to continue to be implemented. The total cost of the project is currently estimated at $271,000,000, primarily due to the delay in anticipated federal appropriations.

The local community has already constructed certain elements of the Corps' plan. These project elements require modifications in order to fit into the Corps' plan and fulfill the need for a "total fan approach" to the flooding problems of the Las Vegas Valley. The Red Rock Detention Basin was constructed by Clark County in 1985 and modifications by the Corps were completed in December 1996. The flood flow released from the basin has been reduced, and the basin's capacity to hold floodwaters was enhanced, thereby increasing the level of downstream protection provided by this feature. Although the Red Rock Detention Basin expansion was the first feature completed, the immediate benefit realized by the community was the removal of approximately five square miles and 4,754 parcels from the alluvial fan flood zones.

The non-federal sponsors also constructed the Flamingo Detention Basin. This facility was completed in February 1992, and is one of the main components of the Federal project. Under the Corps' plan, the flood flows released from this feature will be reduced and the storage capacity increased. The non-federal sponsors have been working with the development community in order to remove the excess sand and gravel from the impoundment area of this facility. Our goal is to have local contractors remove surplus material from the basin for their own use at no cost to either the federal or local governments, thus providing a significant cost savings on this project. The work performed by the non-federal sponsors, construction of Red Rock Detention Basin and Flamingo Detention Basin, prior to the Project Cooperation Agreement being executed have been accounted for in Section 104 credits and total $9,906,000.

As non-federal sponsors for this important flood control project, both the Clark County Regional Flood Control District and Clark County are looking forward to the construction start of each feature of this project and the project's ultimate completion.

Details of the Administration's fiscal year 2001 Civil Works Budget Request indicate that $20,000,000 is proposed for the continued construction of this project. The Los Angeles District of the Corps informs us that their capability for fiscal year 2001 is $28,000,000. Funding at the Corps' capability level will allow:

Complete construction of the following:
—Lower Red Rock Complex
—Red Rock Channel (Segment 10A)
—Blue Diamond Detention Basin
—Red Rock Outlet and Scour Protection
—R–4 Debris Basin and Channel
Start construction of the following:
—Lower Flamingo Diversion Channel
—F–1 Debris Basin and Channel
—F–2 Debris Basin and Channel

The non-federal sponsors are anxious to see all of the above flood control facilities constructed. Further delays in funding the project place portions of the federal project and non-federal projects at risk.

In 1996, the local sponsors were notified that federal funding would be reduced for the Corps' flood control project in Las Vegas due to reductions in the Corps' overall federal budget. Our community has already suffered a five-year delay in project completion due to past reductions in federal funding. Any further delays in federal funding, in the fastest growing community in the nation, will mean increased project costs due to lost opportunities compounded by inflation. It might also mean further loss of life.

In order to provide the required flood protection in a timely fashion, the non-federal sponsors are implementing certain features in advance of the federal government pursuant to Section 211 of WRDA 1996. An amendment to the PCA was fully executed on December 17, 1999, that formalizes the provisions of Section 211 of WRDA 1996. Section 211(f) of WRDA 1996 identifies the Tropicana and Flamingo

Washes Project as one of eight projects in the nation to demonstrate the potential advantages and effectiveness of non-federal implementation of federal flood control projects. The work funded by the non-federal sponsors and completed to date pursuant to Section 211 of WRDA 1996 totals approximately $2,111,711 and is summarized in the following table:

Project Element	Nature of Work	Sponsors Costs
Tropicana Detention Basin Outfall—Russell Road Box Culvert.	Design, Construction & Construction Management.	$88,298
Tropicana Detention Basin Outfall—Valley View Boulevard Box Culvert.	Design, Construction & Construction Management.	174,240
Blue Diamond Channel—Las Vegas Beltway (Segment 7A).	Design (Project element constructed by Corps).	430,210
Blue Diamond Channel—Las Vegas Beltway (Segment 7B).	Design (Project element being constructed by sponsor).	588,355
Red Rock Channel—Las Vegas Beltway (Segment 8).	Design (Project element being constructed by sponsor).	278,451
Red Rock Channel—Las Vegas Beltway (Segment 9).	Design (Project element being constructed by sponsor).	193,000
Red Rock Channel—Las Vegas Beltway (Segment 10A).	Design (Project element being constructed by Corps).	359,157
Total Sponsors' Costs		2,111,711
Estimated Federal Share		1,584,000

The non-federal sponsors are asking the committee to appropriate funding of $1,584,000 to reimburse the non-federal sponsors the federal proportionate share (75 percent) of the completed work pursuant to Section 211 of WRDA of 1996 and the PCA amendment. The non-federal sponsors are continuing to pursue the design and construction of additional features with the primary purpose of providing flood protection as quickly as possible. The total cost of all Section 211 work to be performed by the non-federal sponsors is estimated at $24,604,855.

In summary, the Tropicana and Flamingo Washes project is an important public safety project designed to provide flood protection for one of the fastest growing urban areas in the nation. We ask that the committee provide the Secretary of the Army with $28,000,000, the Corps of Engineers' capability in fiscal year 2001, in order to facilitate continued design and construction of additional phases of this critical flood control project. We are also asking that the committee provide the Secretary of the Army with $1,584,000 to reimburse the non-federal sponsors the federal proportionate share of the work completed by the sponsors in advance of the federal government.

The committee is aware that flood control measures are a necessary investment required to prevent loss of life and damages to people's homes and businesses. Flood control is a wise investment that will pay for itself by preserving life and property and reducing the probability of repeatedly asking the federal government for disaster assistance. Therefore, when balancing the federal budget, a thorough analysis would prove that there is substantial future federal savings in disaster assistance that supports sufficient appropriations through the Civil Works Budget.

CALIFORNIA WATER RESOURCE DEVELOPMENT PROJECTS

Prepared Statement of the California Water Commission

The California Water Commission is an official agency of the State of California. It is composed of nine representative citizens from throughout the State. The Commission is charged by statute with representing State of California and local interests before your Committee. The Commission is coordinating the filing of the statements of a number of State and local agencies. On behalf of the California Water Commission, I would like to express our sincere appreciation for the support this Committee has given California water, fishery and flood control appropriations over the years. I am privileged to submit to you the official recommendations of the State of California for fiscal year 2001 appropriations and request it be included in the

formal hearing record along with the testimonies listed on the attached Statement List.

The Commission would like you to know that it supports projects as shown on the attached document entitled, California Water Commission—Final Recommendations for fiscal year 2001 Federal Appropriations for California Water, Fishery and Flood Control Projects, March 3, 2000. That document contains recommendations adopted by the Commission at its March 3, 2000 meeting in Sacramento, California, where individuals from throughout the State testified on individual projects.

This year the recommended add-ons to the President's budget for the Corps of Engineers are not as extreme as in past years. However, the proposed amounts in some of the large ongoing flood control construction projects are inadequate to maintain the construction schedule. Stopping and starting construction projects can significantly increase the cost, as well as putting the respective project areas in jeopardy of severe damage from flooding of a partially completed project. The Commission has supported projects over the years that are funded under "Continuing Authorities", such as Sections 205, 206, 503 and 1135. These projects compete for very limited funds. Last year the Commission voted to request Congress consider increasing the funding in these Authorities, so more of the needed projects in these categories can be funded. The Commission is still supportive of additional funds.

The California Water Commission has long recognized water recycling as an important element in the management of California's water resources. It is the Commission's view that water recycling projects should be supported in concert, within the limitations of available federal funds, giving due consideration to other potential sources of funds that could be available to effect their implementation. The Commission agreed to work with USBR on language which will give the local sponsor greater assurance of future year support. This will also encourage sponsors to go ahead with expanded facilities with greater expectation of out-year funding.

On March 3, 2000 the Commission also supported a similar program within the Corps of Engineers new authority (WRDA–99, Section 502); however, they added the condition "if additional funding can be secured".

Special recommendations for funds.—The Commission recommends that special consideration be given for appropriation of funds for projects of the U.S. Army Corps of Engineers and U.S. Bureau of Reclamation as shown in the following table. The Commission believes that these projects merit special consideration for the reasons set forth in the information shown on the tables on the following page.

CWC 90—Bay-Delta Ecosystem Restoration (CALFED).—The CALFED Bay-Delta Program is an open collaborative, state-federal-stakeholder effort seeking to develop a comprehensive long-term plan to restore ecosystem health and improve water management for beneficial uses of the Bay-Delta system. The U.S. Army Corps of Engineers is an official part of the ongoing effort and needs to be adequately funded to allow the Corps' experts to officially participate in CALFED activities. A comprehensive package must:

—Improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species.

—Provide good water quality for all beneficial uses.

—Reduce the mismatch between Bay-Delta water supplies and current and projected beneficial uses dependent on the Bay-Delta system.

—Reduce the risk to land use and associated economic activities, water supply infrastructure, and the ecosystem from catastrophic breaching of Delta levees.

The Corps of Engineers is an official part of the ongoing effort and needs to be adequately funded to allow the Corps' experts to officially participate in CALFED activities.

CWC 110—Sacramento and San Joaquin Rivers Comprehensive Study.—In January of 1997, the Central Valley of California was confronted with the largest and most extensive flood disaster in the State's history. The Sacramento River and its tributaries sustained two major levee breaks. In the San Joaquin River Basin, extensive damages resulted from over two dozen levee breaks, sedimentation, and deposition of sand and silt in the fields where flood water poured through the levee breaks. As a result, Congress appropriated $3 million in fiscal year 1998 and $3.5 million in fiscal year 1999 to initiate a comprehensive flood damage reduction and environmental restoration assessment for the Sacramento and San Joaquin River Basins.

The State of California and the Army Corps of Engineers have initiated a four year Comprehensive Study. The Comprehensive Study will build on existing data outlined in investigations such as the Sacramento River Watershed Management Plan, the State's San Joaquin River Management Program, the Central Valley Project Improvement Act (CVPIA), and integrated with these and other existing pro-

grams. The first phase of the Comprehensive Study was 18 months long. This interim report was sent to Congress in April of 1999.

Phase II will result in full development and calibration of basin-wide hydrologic and hydraulic models. Phase II report will include a programmatic EIS/EIR which describes a broad range of potential flood damage reduction measures and integrated ecosystem restoration measures. Some "early implementation projects" will be identified, developed, and to the extent possible recommended for authorization and implementation. Early implementation projects must (1) address identifiable flooding problems, (2) be consistent with the strategy, (3) be singularly effective in achieving program goals, (4) demonstrate broad acceptability, and (5) be readily able to be implemented.

CWC 162—Lopez Dam.—Lopez Reservoir serves as the primary drinking water supply for several South San Luis Obispo communities of Arroyo Grande, Grover Beach, Pismo Beach and Oceano. In addition, the reservoir attracts recreational users from Central and Southern California that are critical to the economic viability of the South County area.

Recent studies have found that the dam could fail during a large magnitude earthquake on the San Andreas Fault. Because of this potential failure, the California Division of Safety of Dams has mandated that the dam be seismically re-mediated to withstand a large magnitude earthquake, or that the operating level of the dam be reduced by 80 percent.

The current cost estimate for the re-mediation of the dam is $26 million. Construction is scheduled to begin in the fall of 2000, and is scheduled to be completed by June 2002.

San Luis Obispo County is seeking a cost sharing partner to help offset the significant financial impact to the communities effected by the needed restoration of this structure. The California Water Commission's Appropriation Committee agreed to do all it could to help secure federal funds.

CWC 238—Arroyo Pasajero.—The Draft Feasibility Investigation Report and draft EIS/EIR, which identifies two candidate alternatives that show a federal interest in a Corps flood control project were released in March 1999. The two projects, the enlarged Westside Detention Basin and the Pasajero Gap Detention Dam, are estimated to cost approximately $238 and $225 million with benefit cost ratios of roughly 1.7:1 and 1.1:2, respectively. During the public review process, both candidate alternatives were challenged. The U.S. Fish and Wildlife Service and the California Department of Fish and Game issued a joint letter conveying their position that endangered species impacts of the project could not be mitigated. This position was maintained during follow-up meetings with staff and management of these agencies. Consequently, the Gap Dam was dropped as a viable alternative.

Interests east of the Aqueduct challenged the Westside Detention Basin, as presented in the Report, because an over chute would discharge flood water across the Aqueduct and on to nearly a hundred thousand acres of rich farmland in a manner inconsistent with recent historical flooding patterns that occurred prior to construction of the Aqueduct. Consequently, the investigation was redirected to eliminate the over chute and focus on a larger Westside Detention Basin that stores more flood water. Due to other developments following a review of the draft, the investigation in being redirected further to include another alternative that takes a large amount of flood water into the Aqueduct, conveys it several miles to the south and releases it to storage on less productive farm land east of the Aqueduct. As a result of these changes in scope, the Draft Feasibility Investigation Report/EIS/EIR is expected to be re-released during the summer of 2001 and the Final Report submitted to the Corps South Pacific Division and Washington Headquarters Offices in early 2002.

CWC 317—American River Watershed (Folsom Dam Modifications).—Located at the confluence of two major rivers, a large portion of the Sacramento area is threatened by flooding from the American River and the Sacramento River. The area of risk covers over 100,000 acres and consists of over 160,000 homes and structures, 400,000 residents and over $37 billion in developed property.

In 1997, the January flood resulted in the largest recorded peak inflow to Folsom Dam, but because of the re-operation of Folsom Reservoir (more flood space in the winter), the releases were kept within the 115,00 cfs safe channel capacity of the lower American River levee system. In response to the January 1997 floods, the Corps re-evaluated the rain flood flow versus recurrence frequency for the American River at the Fair Oaks gage. This new evaluation, which was verified by the Corps' Hydrologic Engineering Center, indicates that the Sacramento area has a higher risk of flooding than previously believed. The evaluation shows that the existing flood control system, after completion of the Common Features Project, provides the area with a level of protection equal to about 1 in 90 in any year. Therefore, over

a 30-year period, the risk of a storm that would overwhelm the existing levee system is about 28 percent.

The Reclamation Board supported a minimum Congressional Authorization of Folsom Dam modifications as part of the Water Resources Development Act of 1999. This would increase the level of protection from 1 in 63 to about 1 in 140. Therefore, over a 30-year period, the risk of a storm that would overwhelm the existing levee system in about 19 percent. The Folsom modifications are common to all plans currently under consideration by Congress. The Water Resources Development Act of 1999 was passed with this element. The eight existing river outlets in Folsom Dam would be enlarged from 5 feet wide by 9 feet high to about 9 feet wide by 16 feet high. This would increase the dam's controlled flood releases capacity from the reservoir while the water surface is still well below the spillway crest.

CWC 333—Kaweah River.—Terminus Dam was authorized by the 1944 Flood Control Act and was constructed by the U.S. Army Corps of Engineers in 1962. Since construction of Terminus Dam, damaging floods have occurred in many years. Downstream communities and areas adjacent to the flood plain are at risk of future flooding.

Initially, various alternatives were evaluated, including alternative storage sites, detention basins, construction alternatives, and nonstructural measures. Based on technical, economical, and environmental criteria, the only feasible alternative is to raise and widen the spillway at Terminus Dam. The Corps' Authorized Plan includes raising the elevation of the existing Terminus Dam spillway. Reservoir storage capacity would be increased by 42,600 acre-feet (about 30 percent). This feature will save an estimated seven million dollars of the approximate 40 million dollar Project cost.

The State of California sponsor is The Reclamation Board and the local sponsors of the Project are the Kaweah Delta Water Conservation District (lead agency), City of Visalia, Tulare Lake Basin Water Storage District, Tulare County, and Kings County.

CWC 353—Guadalupe River.—The Guadalupe River Flood Protection Project will provide flood protection to downtown San Jose's high-tech and commercial industries and established residential neighborhoods, with potential damages from a 1 percent flood exceeding $526 million (1993 value) avoiding impacts to the environment, protecting fish and wildlife, complying with the Endangered Species Act, protecting water quality, and preserving the beneficial use of water.

The Guadalupe River, which flows through the Silicon Valley, is the second largest watershed in Santa Clara County, draining 170 square miles. The project will extend through downtown San Jose from Interstate 880 to Interstate 280. Flood protection works include channel widening, bridge replacement, and underground bypass box culvert, streambed erosion protection features, and terraces. On-site and off-site environmental mitigation work would enhance steelhead trout and Chinook salmon runs. This project is an integral component of San Jose's downtown revitalization efforts.

An appropriation add-on of $10.5 million is requested, in addition to the $3.5 million included in the fiscal year 2001 for a total of $14 million to fund a bypass box culvert, additional right-of-way acquisition for the bypass box culvert, and continuance of mitigation work.

CWC 382—Santa Ana River Mainstem (includes San Timoteo).—The project is located along a 75-mile reach of the Santa Ana River in Orange, Riverside, and San Bernardino counties southeast of and adjacent to metropolitan Los Angeles, California. Construction of this project will primarily provide protection to lands and improvements within Orange County downstream of Prado Reservoir. A severe flood threat exists in this area, which could cause damages in excess of $15 billion and could endanger and disrupt the lives of over three million people living or working in the floodplain.

The $18 million request includes funds for San Timoteo and Prado Dam. This feature of the SAR Project is the key link in providing the level of flood protection envisioned by Congress when it authorized the SAR Project in 1986.

CWC 400—Flood Control Act of 1948, Section 205, Flood Damage Prevention.—The California Water Commission's Appropriations Committee heard testimony on March 3, 2000 requesting support on individual projects. Each of these projects have merit and are needed to prevent recurring flood damages in the local areas. The Commission supports these projects for funding from this Continuing Authority for small projects.

The Commission has witnessed many successful projects in California over the years that have been funded from this Authority. However, the list of project requests are exceeding the funding level. The Commission voted in March, 1999 to

support a request to Congress to increase the nationwide funding level from the present $26,000,000 to $50,000,000.

CWC 420—Water Resources Development Act, 1996, Section 206, Aquatic Ecosystem Restoration.—The California Water Commission's Appropriations Committee heard testimony on March 3, 2000 requesting support on individual projects. The Commission supports these projects to improve the quality of the environment. Section 206 directs the Secretary of the Army to carry out such projects if the Secretary determines that the project will improve the quality of the environment and is in the public interest; and is cost-effective. The cost-sharing provisions state that the nonFederal interests shall provide 35 percent of the cost of the construction of any project carried out under this section, including provision of all lands, easements, rights-of-way, and necessary relocation.

The Commission voted in March of 1999 to support a request to Congress to increase the nationwide funding level.

CWC 435—Water Resources Development Act, 1999, Section 212, Flood Mitigation and Riverine Restoration Program (Challenge 21 Program).—This is a new program that endeavors to fund projects that have joint flood control/riverine ecosystem restoration goals. The section lists 23 priority areas nationwide. The Coachella Valley, Riverside County, California project is listed as the No. 2 priority area. This project will be undertaken at the delta area where the Whitewater River feeds into the Salton Sea. The area is at risk of flooding but with the proper project, could develop into a prime riverine habitat. In addition to improving habitat along the Pacific flyway, it could utilize wetland plants as a natural nutrient removal system for the Salton Sea.

CWC 440—Water Resources Development Act, 1999, Section 502, Environmental Infrastructure (F) Additional Assistance—CWC 441—Harbor/South Bay Water Recycling.—The Harbor/South Bay Water Recycling Project will annually develop up to 48,000 acre-feet of recycled water for municipal, industrial, and environmental purposes in the Los Angeles area. Customers for the recycled water developed by the project have already been identified. They include the ARCO, Chevron and Mobil refineries in Los Angeles County, as well as the Wilmington/Los Angeles Harbor industrial area, the Palos Verdes Peninsula, and the Los Angeles International Airport/Westside area. The cities of Gardena, Carson, Culver City, Torrance and Lomita will also be served by the project.

The House and Senate recently passed the Conference Report to H.R. 1480, the Water Resources Development Act of 1999, which includes a provision authorizing the U.S. Army Corps of Engineers to provide assistance to the West Basin Municipal Water District for the construction of the Harbor/South Bay Water Recycling Project. The Corps is authorized to provide up to $15 million for this project. The legislation limits the federal share to 25 percent of the total cost of the project. The West Basin District expects to spend more than $60 million on the Harbor/South Bay project through fiscal year 2001.

The California Water Commission's Appropriation Committee reviewed this project on September 3, 1999 and on March 3, 2000 reviewed a similar project (San Ramon Valley Recycling Water Project) and had some reservations concerning splintering of federal funding support for recycling projects between the activities of the U.S. Corps of Engineers and recycling projects requesting funding through the U.S. Bureau of Reclamation. On March 3, 2000 the Committee supported funding of projects under this authority if additional funding can be secured.

CWC 450—Water Resources Development Act, 1996, Section 503, Watershed Mgt. Restoration & Development.—The California Water Commission's Appropriations Committee heard testimony on March 3, 2000 requesting support on individual projects. The Commission supports fiscal year 2001 appropriations for the projects. This provision gives the Secretary of the Army the authority to have the Corps provide technical, planning and design assistance to nonFederal interests for carrying out watershed management, restoration and development projects at locations listed in Section 503, Water Resources Development Act, 1996. Last March, the Commission supported a request to Congress to increase the nationwide funding level from the present $15,000,000 to $30,000,000.

CWC 460—Water Resources Development Act, 1986, Section 1135, Project Modification for Improvement of the Environment Program.—The California Water Commission's Appropriations Committee heard testimony on March 3, 2000 requesting support on individual projects. The Commission supports fiscal year 2001 appropriations for each of these projects. Water Resources Development Act of 1986, Section 1135, directs the Secretary of the Army to review the operation of water resources projects constructed before the date of the Act to determine the need for modifications in the structures and operations of such projects for the purpose of improving the quality of the environment in the public interest. Last March, the Commission

supported a request to Congress to increase the nationwide funding level from the present $8,500,000 to $20,000,000. Additional funds are needed as this list of important projects increases.

CWC 500—Bay-Delta Program Ecosystem Restoration (CALFED).—At the confluence of California's two largest rivers, the Sacramento and San Joaquin, the San Francisco Bay and adjoining Sacramento-San Joaquin Delta (Bay-Delta) together form the largest estuary in the western United States. The Bay-Delta is a haven for plants and wildlife, supporting over 750 plant and animal species. The Bay-Delta supplies drinking water for two-thirds of California's citizens and irrigation water for over 7 million acres of the most highly productive agricultural land in the world.

The CALFED Bay-Delta Program is an open collaborative, state-federal-stakeholder effort seeking to develop a comprehensive long-term plan to restore ecosystem health and improve water management for beneficial uses of the Bay-Delta system. The Program is fundamentally different from previous efforts because it seeks to address ecosystem restoration, water quality, water supply reliability, and levee and channel integrity as co-equal program purposes.

On December 18, 1998, CALFED released the Revised Phase II Report which outlined the draft preferred alternative for solving the problems in the Bay-Delta system. The CALFED Program released a Revised Draft EIS/EIR on June 25, 1999. This release will be followed by a public comment period and further refinement of the proposed plan which will conclude on September 23, 1999. The goal is to have a final EIS/EIR in April 2000, with implementation to begin in June 2000.

CWC 600—Trinity River Restoration Program.—On June 21, 1999, the U.S. Fish and Wildlife Service announced the completion of a 15-year comprehensive study of the Trinity River in California which recommends habitat restoration projects and increasing instream fishery flows from 340,000 acre-feet to an average of 595,000 acre-feet to restore salmon and steelhead runs. Significant declines in salmon and steelhead populations and associated habitats occurred after the completion of the Trinity River Diversion (TRD) of the Central Valley Project in 1964. Coho salmon were listed as threatened in 1997 under the Endangered Species Act.

This restoration requires removal of riparian berms at selected sites to promote the creation of alternate bar sequences similar to those which existed prior to the construction of the TRD. The restoration will be accomplished by mechanical removal of berms at selected sites. The project also will increase annual instream allocations above the current 340 TAF allocation, ranging from 369 to 815 TAF, with an average of 595 TAF. A program to balance the coarse and fine sediment budget of the upper river that has been disrupted by the construction and operation of the TRD will be conducted. The project will also establish an Adaptive Management Program.

CWC 612—Coleman National Fish Hatchery.—The Coleman National Fish Hatchery was built by the U.S. Bureau of Reclamation (USBR) on Battle Creek in 1942 to mitigate damages to salmon spawning areas in the Sacramento River system caused by the construction of Shasta and Keswick Dams. Federal custody and operation were transferred to the U.S. Fish and Wildlife Service (USFWS) in 1948. Title 34 of Public Law 102–575 (Central Valley Project Improvement Act) specifies that USBR provide funding for completion of the rehabilitation of the Coleman National Fish Hatchery: 50 percent will be reimbursable from water and power users and 50 percent non-reimbursable.

Remaining rehabilitation facilities are additional water treatment facilities which include one sand filter, an air compressor, and one ozone contact/stripper capable of treating 15,000 gallons per minute and installation of various ozone equipment. Also, installation of a 54-inch pipeline from the ozone treatment plant to the large raceways. The replacement of facilities for administration, the fish health laboratory and public contact area will be the final items to complete the modifications at Coleman NFH.

With the new fish restoraton program that is being developed on Battle Creek, fish will again spawn and rear above Coleman NFH. Therefore, in the future, water diversions from Battle Creek to the hatchery will need to be screened. This is estimated to cost about $5.5 million. Discussions are underway to determine the best source of funding for this part of the project.

CWC 621—Winter-Run Chinook Salmon Captive Broodstock Program.—The captive broodstock program arose from shared concerns for the fate of the Sacramento River winter-run chinook salmon. Active participants have included representatives of U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Bureau of Reclamation, Bodega Marine Laboratory of the University of California, Steinhart Aquarium of the California Academy of Sciences, California Department of Fish and Game, California Department of Water Resources, Pacific Coast Federation of Fishermen's Associations, Tyee Club and California Water Commission.

The program has promoted the genetic conservation of winter-run chinook salmon. Analyses of the effective size of the winter-run stock showed that a properly managed artificial propagation program to which the captive broodstock program contributes gametes is not likely to have a negative effect and may, instead, be helping to maintain or slightly increase the genetic diversity of the stock.

The captive broodstock program was initiated as a rapid response to the endangerment of the Sacramento River winter-run chinook salmon. To date, the program has realized many of its objectives. Gametes from captively reared broodstock have contributed to artificial propagation of the winter-run population. In each year since its inception, the program has provided progressively better spawners, gamete quality, fertilization and production of juvenile fish. The artificial propagation program now works in concert with BML researchers to confirm run identification of wild-trapped adult winter and spring run salmon destined for spawning at the Coleman and Livingston Stone National Fish hatcheries to avoid hybridization. Since the completion of the Livingston Stone National Fish Hatchery below Shasta Dam, one year class of winter-run chinook salmon has been reared successfully in that facility. Rearing at that facility allows the growing fry to imprint on Sacramento River water thus helping ensure that, when adults, they return to spawn in their natal stream.

These and other developments will lead to significant changes in conventional salmon hatchery practices and reduce impacts of hatchery releases on wild Central Valley chinook salmon. Although much good work has been completed, some critical questions remain to be answered through additional research. These questions include: Are progeny from captive parents as fit as those from wild parents? How do we synchronize growth and sexual maturation of captive salmon so that both sexes are ready to spawn at the same time? If we can't achieve synchrony in sexual maturity, how can the potency of frozen sperm be increased? Answering these questions can help balance the need and effectiveness of hatchery supplementation for listed runs while helping identify management actions to move towards ecosystem based salmon restoration.

CWC 660—Arroyo Pasajero Studies—CWC 661—Arroyo Pasajero Implementations—CWC 662—Arroyo Pasajero (Flood Easements).—The Draft Feasibility Investigation Report and draft EIS/EIR, which identifies two candidate alternatives that show a federal interest in a Corps flood control project were released in March 1999. The two projects, the enlarged Westside Detention Basin and the Pasajero Gap Detention Dam, are estimated to cost approximately $238 and $225 million with benefit cost ratios of roughly 1.7:1 and 1.1:2, respectively. During the public review process, both candidate alternatives were challenged. The U.S. Fish and Wildlife Service and the California Department of Fish and Game issued a joint letter conveying their position that endangered species impacts of the project could not be mitigated. This position was maintained during follow-up meetings with staff and management of these agencies. Consequently, the Gap Dam was dropped as a viable alternative.

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CWC 663—Cantua Creek Strm Group-EIS.—The Cantua Creek Stream Group consists of seven western San Joaquin Valley ephemeral streams, as well as several smaller unnamed drainages located west of the San Luis Canal segment of the California Aqueduct extending between 20 and 50 miles north of the Arroyo Pasajero.

Flood water overtopped the western embankment of the Canal in 1969 and 1995, causing extensive damage to the concrete lining. Since the 1960s, over 40,000 acre-feet of Cantua Creek Stream Group flood water and an estimated 2.5 million cubic yards of sediment have entered the Canal from overtopping or through the drain inlets. These streams have also deposited as much as 2.9 million cubic yards of sediment upslope of the Canal, eliminating 1,600 acre-feet (about 50 percent) of the original impounding capacity. The Cantua Creek Stream Group poses a flood risk

with a potential to breach the Canal and disrupt water service to millions of people in southern California and the southern San Joaquin Valley. In addition, the cost associated with the degradation to water quality from uncontrolled flood inflow is a substantial expense to both the Canal operators and water customers. The situation is continually worsening as additional sediment is deposited along the west side of the Aqueduct.

The Department of Water Resources, with cost sharing by USBR, is completing a reconnaissance study of these drainage and sedimentation problems and will be performing feasibility level investigations during fiscal year 2000 to seek solutions. In addition, interim improvements to restore diminished impounding capacity and improve sediment decanting capabilities for smaller flood flows will extend into fiscal year 2000. Under the San Luis Unit Joint-Use Facilities Agreement, USBR is responsible for 45 percent of the cost of this work.

CWC 900—Public Law 102–575, Title XVI and Amended by Public Law 104–266 (Mid-Pacific Region)—CWC 1000—Public Law 102–575, Title XVI and Amended by Public Law 104–266 (Lower Colorado Region).—The California Water Commission has long recognized water recycling as an important element in the management of California's water resources, both for cleanup of municipal, industrial and agricultural discharges and to improve the quantity and quality of water supplies. The Department of Water Resources' Bulletin 160–98, California Water Plan Update, January 1998, identifies up to 800,000 acre-feet of total potential additional water recycling in California by the year 2020.

It is the Commission's view that both water recycling programs and the other ongoing USBR programs are highly important and that they should be supported in concert, within the limitations of available federal funds, giving due consideration to other potential sources of funds that could be available to effect their implementation. The Commission agreed to work with USBR on language which will give the local sponsor greater assurance of future year support. This will also encourage sponsors to go ahead with expanded facilities with greater expectation of out-year funding.

CWC 1001—Water Recycling Research and Development Program.—In July 1999, a partnership of 18 water and wastewater agencies, the State Department of Water Resources and the U.S. Bureau of Reclamation released a draft regional water recycling plan. This plan would connect recycling systems in Santa Clara, San Mateo, Alameda, Contra Costa and San Francisco counties. The regional recycled water system could generate an additional 125,000 acre-feet a year of recycled water by 2010, and 240,000 acre-feet by 2020, according to the draft plan.

Recognizing the very real need for substantial quantities of recycled and the reluctance of a few users to accept recycled water because of cost or water quality considerations, the Commission encourages the Bureau to ensure that adequate funding will be available in the near-term to conduct the necessary research and development studies to support the next generation of water recycling projects. The proponents of water recycling projects have demonstrated that there is a present need for further research and development of the capabilities of emerging treatment technology to improve the cost-effectiveness of water recycling and address potential threats to public health.

Federal participation in a comprehensive water recycling research and development program would support the identification of more cost-effective, feasible water recycling projects and encourage project implementation at the local level.

CWC 1108—Salton Sea Research Project.—Over the last several decades there has been concern over the increasing salinity of the Salton Sea and the impacts it has had on the Sea's ecology. Increasing salinity and other water quality issues are threatening biological values and recreational uses of the Sea. An additional concern is the rising water surface elevation. The raising water surface has flooded much of the developed area and the shoreline wildlife habitat used by a number of different bird species. The rising sea also has inundated much of the Salton Sea National Wildlife Refuge at the south end of the sea. The full impacts of increasing salinity, the decline in other water quality attributes, and water surface elevation on endangered species that inhabit the sea are unknown, but studies are presently ongoing. In order to identify and evaluate possibilities for improving the condition of the sea, a program of additional planning, research, and environmental impact analysis are needed.

The objectives of this program are to identify and evaluate alternatives to: improve water quality conditions; maintain quality habitat for migratory birds and endangered species; enhance the fishery; and protect human recreation values in and around the Salton Sea. Environmental scoping and scientific research of remediation alternatives currently is underway.

CWC 1304—Colorado River Salinity Control Program-Basinwide.—The California Water Commission's Appropriation Committee recognizes the need to support federal funding levels that are required to meet the numeric criteria and standards that have been established for salinity on the Colorado River.

The Commission supports fiscal year 2001 appropriations for Title I of the Colorado River Basin Salinity Control Act, which covers delivery of water to Mexico, pursuant to the 1944 Mexican Water Treaty and Minute 242 of the International Boundary and Water Commission.

CWC 1500 Bay-Delta Ecosystem Restoration (CALFED).—The CALFED Bay-Delta Program is an open collaborative, state-federal-stakeholder effort seeking to develop a comprehensive long-term plan to restore ecosystem health and improve water management for beneficial uses of the Bay-Delta system. A comprehensive package must:

—Improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species.

—Provide good water quality for all beneficial uses.

—Reduce the mismatch between Bay-Delta water supplies and current and projected beneficial uses dependent on the Bay-Delta system.

—Reduce the risk to land use and associated economic activities, water supply infrastructure, and the ecosystem from catastrophic breaching of Delta levees.

The U.S. Fish and Wildlife Service is an official part of the ongoing effort and needs to be adequately funded to allow the Service's experts to officially participate in the CALFED activities.

CWC 1600—Ballast Water Control Programs (Invasive Species).—The National Invasive Species Act (NISA) of 1996 re-authorized and amended the Non indigenous Aquatic Nuisance and Prevention and Control Act of 1990. The purpose of the legislation was to provide tools for the management and control of the spread of aquatic nuisance species, such as zebra mussels. Ballast water carried by ships is one of the major factors for the introduction of non indigenous species to North American waters. NISA re-authorized a mandatory ballast management program for the Great Lakes, an area already heavily infested with zebra mussels, and created an enforceable national ballast management program for all U.S. coastal regions. The U.S. Coast Guard is mandated under the Act to:

—Develop and issue ballast water guidelines for all vessels entering U.S. waters.

—Establish reporting and sampling procedures to monitor compliance.

—Develop a mariner education and technical assistance program.

—Conduct ecological and ballast water surveys of the Columbia River system.

—Report to Congress by 1999 on progress on ballast water programs and on any intent to make regulations mandatory in any region.

California has established a state policy aimed at preventing the introduction of aquatic nuisance species and pathogens via ballast water. In 1998, the Western Governors' Association adopted a resolution supporting actions to prevent the spread and introduction of undesirable aquatic and terrestrial species, and in 1999 established a State work group to collaborate with the Western Regional panel created by NISA. The California Water Commission supports full funding to implement the U.S. Coast Guard's ballast water regulations program.

Final Recommendations For Fiscal Year 2001 Federal Appropriations
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CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
U.S. ARMY CORPS OF ENGINEERS									
90	Bay-Delta Ecosystem Restoration (CALFED)(See CWC 500 & 1500) (Funding under Remaining Item)	Corps		1,662,000	425,000	1,000,000	Support	250,000	500,000
100	**General Investigation - Surveys**								
101	Lake Siskiyou Area Watershed Specific Plan			0	0	100,000	Support	0	Support
102	Lower Sacramento River Riparian Revegetation(Solano,Yolo)	Corps	1,970,000	771,000	50,000	200,000	Support	237,000	237,000
		NonFed	1,350,000						
		Total	3,320,000						
103	Dry Creek (Middletown)	Corps	400,000	104,000	25,000	150,000	Support	150,000	150,000
		NonFed	300,000						
		Total	700,000						
105	Middle Creek	Corps	1,095,000	705,000	300,000	300,000	Support	90,000	90,000
		NonFed	495,000						
		Total	1,590,000						
108	Sutter Basin(Sutter)	Corps	1,350,000	69,000	56,000	100,000	Support	150,000	150,000
		NonFed	1,250,000						
		Total	2,600,000						
109	Strong & Chicken Ranch Sloughs(Sacramento)	Corps	800,000	84,000	41,000	500,000	Support	150,000	500,000
		NonFed	700,000						
		Total	1,500,000						

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103	Dry Creek (Middletown)	Corps	400,000	104,000	25,000	150,000	Support	150,000	150,000
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		Total	700,000						
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		NonFed	495,000						
		Total	1,590,000						
108	Sutter Basin(Sutter)	Corps	1,350,000	69,000	56,000	100,000	Support	150,000	150,000
		NonFed	1,250,000						
		Total	2,600,000						
109	Strong & Chicken Ranch Sloughs(Sacramento)	Corps	800,000	84,000	41,000	500,000	Support	150,000	500,000
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110	Sacramento & San Joaquin Rivers Comprehensive Study	Corps	15,500,000	6,533,000	2,380,000	3,000,000	Support	1,500,000	3,200,000
		NonFed	11,000,000						
		Total	26,500,000						
115	Lower Cache Creek, Yolo/Woodland and vicinity	Corps	1,970,000	695,000	50,000	750,000	Support	300,000	500,000
		NonFed	1,250,000						
		Total	3,220,000						
118	Suisun Marsh	Corps	1,100,000	0	60,000		Support	65,000	65,000
		NonFed	1,000,000						
		Total	2,100,000						
120	Sacramento-San Joaquin Delta Investigation	Corps	5,940,000	5,204,000	162,000	200,000	Support	300,000	300,000
		NonFed	2,975,000						
		Total	8,915,000						
121	San Joaquin River Basin, Corral Hollow Creek	Corps	1,100,000	0	60,000	380,000	Support	65,000	140,000
		NonFed	1,000,000						
		Total	2,100,000						
122	San Joaquin River Basin Stockton Metropolitan Area (Section 211)	Corps	1,611,000	1,231,000	200,000	150,000	Support	180,000	180,000
		NonFed	756,000						
		Total	2,367,000						
124	San Joaquin River Basin Stockton Metropolitan Area (Farmington Dam)	Corps	804,000	370,000	334,000	50,000	Support	100,000	100,000
		NonFed	584,000						
		Total	1,388,000						
125	San Joaquin River Basin Cosumnes and Mokelume Rivers	Corps	2,375,000	100,000	50,000	375,000	Support	150,000	300,000
		NonFed	2,250,000						
		Total	4,625,000						
129	San Joaquin River Basin Tuolumne River and Tributaries	Corps	1,600,000	87,000	38,000	400,000	Support	150,000	150,000
		NonFed	1,500,000						
		Total	3,100,000						

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
130	San Joaquin River Basin West Stanislaus County	Corps	747,000	257,000	277,000	300,000	Support	213,000	213,000
		NonFed	650,000						
		Total	1,397,000						
131	Millerton Enlargement			0	0	300,000	Support	0	100,000
133	San Pablo Bay Watershed (Sonoma)	Corps	2,813,000	113,000	500,000	500,000	Support	200,000	550,000
		NonFed	2,700,000						
		Total	5,513,000						
134	San Joaquin River Basin, Frazier Creek	Corps	1,100,000	0	60,000		Support	65,000	140,000
		NonFed	1,000,000						
		Total	2,100,000						
135	Poso Creek (Kern)	Corps	1,050,000	32,000	30,000	500,000	Support	150,000	400,000
		NonFed	1,000,000						
		Total	2,050,000						
136	White River & Deer Creek	Corps	1,050,000	32,000	31,000			150,000	150,000
		NonFed	1,000,000						
		Total	2,050,000						
140	Russian River Watershed	Corps	3,677,000	352,000	107,000	125,000	Support	200,000	200,000
		NonFed	3,325,000						
		Total	7,002,000						
144	Napa River, Salt Marsh Restoration	Corps	1,806,000	1,068,000	151,000	275,000	Support	300,000	300,000
		NonFed	1,350,000						
		Total	3,156,000						
145	Napa Valley Watershed Mgmt.Study	Corps	1,100,000	81,000	19,000	100,000	Support	50,000	50,000
		NonFed	1,000,000						
		Total	2,100,000						
146	Santa Rosa Creek (Sonoma)	Corps	1,216,000	352,000	129,000	200,000	Support	300,000	300,000
		NonFed	964,000						
		Total	2,180,000						

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
147	Laguna de Santa Rosa (Sonoma)	Corps	1,975,000	100,000	172,000	200,000	Support	200,000	200,000
		NonFed	1,875,000						
		Total	3,850,000						
149	Marin County Shoreline, San Clemente Creek	Corps	1,350,000	1,250,000	0	25,000	Support	0	Support
		NonFed	1,000,000						
		Total	2,350,000						
153	San Francisquito Creek(Santa Clara)			0	0	0	Support	0	Support
154	Santa Clara County/ San Francisco Bay Shoreline			0	0	0	Support	0	Support
155	Upper Penitentia Creek (Santa Clara)	Corps	1,845,000	446,000	215,000	250,000	Support	300,000	300,000
		NonFed	1,500,000						
		Total	3,345,000						
156	Pajaro River Basin	Corps	1,100,000	0	100,000	100,000	Support	50,000	50,000
		NonFed	1,000,000						
		Total	2,100,000						
160	Morro Bay Estuary (San Luis Obispo)	Corps	600,000	100,000	86,000	100,000	Support	250,000	250,000
		NonFed	500,000						
		Total	1,100,000						
161	San Luis Obispo County Streams	Corps	800,000	0	75,000		Support	170,000	170,000
		NonFed	700,000						
		Total	1,500,000						
162	Lopez Dam								Support Authorization
170	Santa Ynez River(Santa Barbara)	Corps	100,000	0	0	100,000	Support	0	100,000
		NonFed	0						
		Total	100,000						

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
171	San Antonio Creek(Santa Barbara)	Corps	800,000	0	75,000	100,000	Support	125,000	125,000
		NonFed	700,000						
		Total	1,500,000						
175	Mugu Lagoon (Ventura)	Corps	700,000	100,000	162,000	150,000	Support	250,000	250,000
		NonFed	600,000						
		Total	1,300,000						
176	Matilija Dam(Ventura)	Corps	1,100,000	0	75,000		Support	150,000	225,000
		NonFed	1,000,000						
		Total	2,100,000						
180	Malibu Creek Watershed	Corps	850,000	100,000	0		Support	0	500,000
		NonFed	750,000						
		Total	1,600,000						
181	Upper Santa Ana Watershed	Corps	1,100,000	80,000	106,000	100,000	Support	100,000	100,000
		NonFed	1,000,000						
		Total	2,100,000						
182	Special Study Riverside Co. Includes San Jacinto Watershed & Santa Margarita Creek								2,000,000
184	Newport Bay/San Diego Creek Watershed	Corps	1,220,000	120,000	212,000	140,000	Support	381,000	381,000
		NonFed	1,120,000						
		Total	2,340,000						
185	Coastal Bluff Erosion Feasibility Study-City of Huntington Beach		600,000	100,000	100,000	300,000	Support	0	300,000
			500,000						
			1,100,000						
186	Aliso Creek Watershed Mainstem (Orange)	Corps	1,100,000	0	50,000	161,000	Support	50,000	550,000
		NonFed	1,000,000						
		Total	2,100,000						

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
187	Special Area Management Plan	Corps	1,704,000	363,000	437,000	300,000	Support	0	900,000
	(Orange County)	NonFed	1,136,000						
		Total	2,840,000						
188	Orange County,Santa Ana Rv. Basin	Corps	1,175,000	80,000	106,000	100,000	Support	100,000	200,000
		NonFed	1,075,000						
		Total	2,250,000						
189	San Juan Creek Watershed	Corps	1,470,000	1,056,000	364,000	414,000	Support	50,000	50,000
	Management (Orange)	NonFed	1,130,000						
		Total	2,600,000						
190	San Juan Creek, South Orange County	Corps	1,100,000	0	50,000			50,000	550,000
		NonFed	1,000,000						
		Total	2,100,000						
191	Whitewater River Basin	Corps	2,239,000	2,224,000	15,000	0	Defer	0	500,000
	(Riverside)	NonFed	1,814,000						
		Total	4,053,000						
192	San Jacinto River		1,000,000	0	75,000	100,000	Support	225,000	225,000
	(Riverside)		900,000						
			1,900,000						
193	Mojave River Forks Dam	Corps	1,100,000	100,000	105,000	300,000	Support	200,000	200,000
	(San Bernardino)	NonFed	1,000,000						
		Total	2,100,000						
194	City of San Bernardino	Corps	1,000,000	0	75,000	300,000	Support	175,000	275,000
		NonFed	900,000						
		Total	1,900,000						
195	San Bernardino County	Corps	850,000	80,000	106,000	100,000	Support	100,000	100,000
		NonFed	750,000						
		Total	1,600,000						

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
196	Tijuana River Valley	Corps	1,100,000	100,000	70,000	250,000	Support	205,000	350,000
		NonFed	1,000,000						
		Total	2,100,000						
197	Tahoe Basin, Calif. and Nevada	Corps	1,200,000	210,000	25,000	150,000	Support	150,000	150,000
		NonFed	1,000,000						
		Total	2,200,000						
198	Los Angeles County (special study)	Corps	1,100,000	0	75,000			225,000	225,000
		NonFed	1,000,000						
		Total	2,100,000						
199	Special Area Management Plan (San Diego County)	Corps	1,620,000	100,000	0	300,000	Support	0	500,000
		NonFed	1,080,000						
		Total	2,700,000						
200	**Preconstruction Engineering & Design**								
202	Yuba River	Corps	1,350,000	50,000	150,000	700,000	Support	400,000	500,000
		NonFed	450,000						
		Total	1,800,000						
205	Middle Creek	Corps	750,000	0	0			160,000	160,000
		NonFed	250,000						
		Total	1,000,000						
210	American River Watershed	Corps	28,600,000	14,896,000	4,000,000	5,000,000	Support	3,285,000	3,285,000
		NonFed	0						
		Total	28,600,000						
220	South Sacramento County Streams	Corps	3,750,000	949,000	430,000	4,000,000	Support	200,000	3,000,000
		NonFed	1,250,000						
		Total	5,000,000						

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
225	Stockton Metropolitan Area	Corps	750,000	0	0			150,000	150,000
	(Farmington Dam)(see CWC 326)	NonFed	250,000						
		Total	1,000,000						
232	Pine Flat Dam, Fish and Wildlife	Corps	1,125,000	0	86,000	300,000	Support	300,000	300,000
	Habitat Restoration	NonFed	375,000						
		Total	1,500,000						
234	Tule River	Corps	1,125,000	30,000	150,000	800,000	Support	400,000	400,000
		NonFed	375,000						
		Total	1,500,000						
238	Arroyo Pasajero	Corps	4,500,000	0	100,000	2,685,000	Support	500,000	500,000
	(Also CWC 660)	NonFed	1,500,000						
		Total	6,000,000						
245	Bolinas Lagoon Ecosystem	Corps	1,500,000	0	0	200,000	Support	300,000	300,000
	Restoration (Marin County)	NonFed	500,000						
		Total	2,000,000						
254	Pajaro River, Watsonville	Corps	6,445,000	2,094,000	1,400,000	50,000	Support	600,000	1,900,000
	(Santa Cruz)	NonFed	0						
		Total	6,445,000						
280	Llagas Creek (See 355)	Corps	750,000	0	250,000		Support	240,000	1,000,000
		NonFed	250,000						
		Total	1,000,000						
285	Upper Guadalupe River	Corps	3,075,000	283,000	1,258,000	300,000	Support	500,000	500,000
		NonFed	1,025,000						
		Total	4,100,000						

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
290	Lower Mission Creek	Corps	1,125,000	0	212,000	250,000	Support	325,000	325,000
	(Santa Barbara)	NonFed	375,000						
		Total	1,500,000						
295	Murrietta Creek (Riverside)	Corps	1,500,000	0	0	100,000	Support	300,000	1,000,000
		NonFed	500,000						
		Total	2,000,000						
298	Truckee Meadows	Corps	7,388,000	5,688,000	498,000	550,000	Support	500,000	500,000
300	**Construction - General**								
302	Sacramento River Restoration at	Corps	20,000,000	5,226,000	5,146,000	6,000,000	Support	4,100,000	4,100,000
	Glenn-Colusa Irrigation District	NonFed	6,000,000						
	(Glenn)(Also see CWC 622)	Total	26,000,000						
303	Sacramento River Bank Protection	Corps	179,900,000	107,608,000	4,003,000	7,000,000	Support	3,300,000	5,000,000
		NonFed	69,500,000						
		Total	249,400,000						
304	Mid-Valley Area	Corps	14,900,000	8,356,000	3,430,000	4,000,000	Support	2,000,000	2,000,000
	Levee Reconstruction	NonFed	5,000,000						
		Total	19,900,000						
305	Marysville/Yuba City	Corps	32,550,000	30,493,000	257,000	300,000	Support	760,000	760,000
	Levee Reconstruction	NonFed	10,750,000						
		Total	43,300,000						
306	Upper Sacramento Area	Corps	5,720,000	2,435,000	1,620,000	3,055,000	Support	1,665,000	1,665,000
	Levee Reconstruction	NonFed	1,880,000						
		Total	7,600,000						
307	Lower Sacramento Area	Corps	4,810,000	1,838,000	1,487,000	2,317,000	Support	1,485,000	1,485,000
	Levee Reconstruction	NonFed	1,590,000						
		Total	6,400,000						
310	American River Watershed-(Levee	Corps	72,200,000	14,709,000	11,579,000	17,000,000	Support	10,000,000	13,000,000
	Improvements on American	NonFed	23,800,000						
	and Sacramento Rivers)	Total	96,000,000						

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
315	American Rv. Watershed(Natomas)	Corps	26,089,000	16,715,000	4,227,000	7,900,000	Support	0	Support
		NonFed	12,591,000				(Support reimbursement for Phase II.)		
		Total	38,680,000						
317	American Rv. Watershed (Folsom Dam Modifications)	Corps	97,500,000	0	2,400,000			5,000,000	12,000,000
		NonFed	52,500,000						
		Total	150,000,000						
320	West Sacramento Project	Corps	17,700,000	10,617,000	5,308,000	7,700,000	Support	1,775,000	1,775,000
		NonFed	5,800,000						
		Total	23,500,000						
325	San Joaquin Basin-Stockton Metropolitan Area (Section 211 Reimbursement)								10,000,000
326	Stockton Metropolitan Area (Farmington Dam)((See CWC 225)(Section 502, WRDA 99)								Support
332	Merced County Streams	Corps	91,800,000	18,478,000	429,000	500,000	Support	500,000	500,000
		NonFed	40,900,000						
		Total	132,700,000						
333	Kaweah River (Tulare)	Corps	23,500,000	2,900,000	716,000	2,500,000	Support	500,000	3,000,000
		NonFed	17,000,000						
			40,500,000						
340	Success Dam and Reservoir, Tule River, Dam Safety Seismic Remediation	Corps	30,900,000	1,140,000	872,000	1,250,000	Support	1,000,000	1,000,000
		NonFed	0						
		Total	30,900,000						
345	Corte Madera Creek	Corps	21,900,000	12,162,000	429,000	500,000	Support	100,000	500,000
		NonFed	15,200,000						
		Total	37,100,000						

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
350	Napa River	Corps	91,000,000	15,710,000	2,002,000	6,500,000	Support	4,000,000	4,000,000
		NonFed	91,000,000						
		Total	182,000,000						
353	Guadalupe River (Santa Clara)	Corps	78,500,000	69,128,000	4,288,000	5,000,000	Support	3,500,000	14,000,000
		NonFed	104,300,000						
		Total	182,800,000						
354	Coyote and Berryessa Creeks	Corps	43,300,000	32,533,000	0	Support	Support	0	2,300,000
	(Santa Clara)	NonFed	34,930,000						
		Total	78,230,000						
355	Llagas Creek-Morgan Hill		22,500,000	0	0	250,000	Support	0	0
	(Santa Clara)		22,500,000						
			45,000,000						
356	San Lorenzo River (Santa Cruz)	Corps	16,330,000	3,934,000	4,116,000	4,800,000	Support	4,000,000	7,500,000
		NonFed	6,070,000						
		Total	22,400,000						
361	Santa Paula Creek (Ventura)	Corps	36,100,000	24,605,000	11,495,000	14,800,000	Support	0	2,000,000
		NonFed	1,600,000						
		Total	37,700,000						
381	Los Angeles County Drainage	Corps	150,000,000	97,300,000	42,879,000	50,000,000	Support	9,821,000	9,821,000
	Area Project (LACDA)	NonFed	50,000,000						
		Total	200,000,000						
382	Santa Ana River Mainstream	Corps	883,000,000	627,867,000	24,013,000	28,000,000	Support	18,000,000	18,000,000
	(Includes San Timoteo and Prado)	NonFed	439,000,000						
		Total	1,322,000,000						
387	Norco Bluffs Bank Stabilization	Corps	8,025,000	5,580,000	2,445,000	2,200,000	Support	0	4,000,000
	Santa Ana River (Riverside)	NonFed	2,675,000						
		Total	10,700,000	(Support Section 902 Re-Authorization to allow project to be completed.)					

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
400 Flood Control Act of 1948,Section 205, Flood Damage Prevention									
Continuing Authorities Prog.($25,000,000-all programs) 1/ Within available funds.									
401	Kidder Creek Flood Control Project					Support	Support		Support
402	Tehama Flood Control (Tehama)	Corps	1,750,000			100,000	Support		Support
		NonFed	1,050,000						
		Total	2,800,000						
403	Hamilton City Flood Control (Glenn)	Corps	2,300,000			200,000	Support		Support
		NonFed	1,700,000						
		Total	4,000,000						
404	Nuisance Flooding Near the 3 B's					Support	Support		Support
405	Rock Creek & Keefer Slough(Butte)					Support	Support		Support
406	Willow Creek Flood Control Project	Corps	1,000,000			1,000,000	Support		Support
		NonFed	1,000,000						
		Total	2,000,000						
407	Magpie Creek (Sacramento)	Corps	4,593,000			Support	Support		3,000,000
		NonFed	5,208,000						
		Total	9,801,000						
408	City of Folsom, Humbug and Willow Creek						Support		Support
409	Winters and Vicinity (Yolo)	Corps	1,530,000			Support	Support		Support
		NonFed	1,970,000						
		Total	3,500,000						
410	Ledgewood Creek (Solano)					400,000	Support		Support
411	Novato Urban Flood Control (Marin)					600,000	Support		Support

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
412	Mare Island						Support		Support
413	Coyote Creek at Rock Springs								Support
414	San Pedro Creek, Pacificia	Corps	4,558,000			Support	Support		Support
415	Fox Field Industrial Corridor(Los Angeles Co.)						Support		Support
416	Mission Zanja Creek (San Bernardino)	Corps	1,370,000			Support	Support		Support
		NonFed	870,000						
		Total	2,240,000						
420	**Water Resources Dev. Act, 1996, Section 206, Aquatic Ecosystem Restoration** ($10,000,000 in President's FY 2001 Budget for all programs.)								
421	Edgewood Creek(South Tahoe)						Support		Support
422	Clear Lake Basin Watershed Restoration (Lake)(Also see CWC 451)					2,000,000	Support		Support
423	Santa Rosa Vernal Pools (Sonoma)	Corps	750,000			Support	Support		Support
		NonFed	404,000						
		Total	1,154,000						
424	Lake Natoma						Support		Support
425	Stockton Waterfront					Support	Support		Support
426	The Delta Science Center For Restoration, Research and Education at Big Break								Support

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
427	Penn Mine Remediation	Corps				Support	Support		Support
		NonFed	5,000,000						
		Total	10,000,000						
428	Santa Clara Basin Watershed Management Initiative					300,000	Support		Support
429	Santa Anita Creek (City of Arcadia and Sierra Madre)					600,000	Support		Support
430	Elsinore Valley Municipal Water District					Support	Support		Support
431	Lower Truckee River (Pyramid Lake Paiute Tribe)	Corps					Support		Support
		NonFed							
		Total							
435 Water Resources Dev. Act. 1999, Section 212,, Flood Mitigation and Riverine Restoration Program (Challenge 21 Program) ($20,000,000 in President's FY 2001 Budget for all programs)									
436	Coachella Valley (Riverside)						Support		Support
440 Water Resources Dev. Act of 1999, Section 502, Environmental Infrastructure (f) Additional Assistance									
441	Harbor/South Bay Water Recycling	(Support up to $15 million if additional funding can be secured.)					Defer		15,000,000
442	San Ramon Valley Recycling Water Project	(Support up to $4.7 million if additional funding can be secured.)							4,700,000
450 Water Resources Dev. Act, 1996, Section 503, Watershed Mgt. Restoration & Development ($15,000,000 for entire length of program.)									
451	Clear Lake Watershed Management (Lake) (Also see CWC 422)					Support	Support		Support
452	Water Quality & Storm Drainage Improvements Project (City of Folsom)					500,000	Support		Support

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
460 Water Resources Dev. Act, 1986, Section 1135, Project Modification for Improvement of the Environment Program ($14,000,000 in President's FY 2001 Budget)									
461	Upper Sacramento River Murphy Slough	Corps	2,776,500			Support	Support		Support
		NonFed	925,000						
		Total	3,701,500						
462	Mormon Channel					Support	Support		Support
463	Cherokee Canal					Support	Support		Support
465	Sacramento-San Joaquin Delta Prospect Island (Solano)	Corps	3,750,000			Support	Support		Support
		NonFed	1,250,000						
		Total	5,000,000						
466	Putah Creek, South Fork Preserve	Corps	1,575,000			Support	Support		Support
		NonFed	525,000						
		Total	2,100,000						
467	Pine-Flat Turbine Bypass	Corps	3,585,000			Support	Support		Support
		NonFed	1,195,000						
		Total	4,780,000						
468	Wildcat-San Pablo Creeks (Contra Costa)					Support	Support		Support
469	Dominguez Gap	Corps	1,657,500			Support	Support		Support
		NonFed	552,500						
		Total	2,210,000						
470	Colusa Basin Wetland Project					Support	Support		Support

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
471	Gunnerson Pond (Riverside)	Corps	3,291,000			Support	Support		1,400,000
		NonFed	1,097,000						
		Total	4,388,000						
472	Playa Del Rey Wetlands (Ballona) Restoration	Corps	10,000				Support		Support
U.S. BUREAU OF RECLAMATION									
500	Bay-Delta Ecosystem Restoration (CALFED)(See CWC 90 & 1500)	USBR	430,000,000	34,860,119	60,000,000	95,000,000	Support	60,000,000	60,000,000
555	**General Planning Studies**	USBR	Continuing		224,140	250,000	Support	233,000	233,000
	CVP, Trinity River								
600	Trinity River Restoration Program	USBR	114,539,484	77,539,539	5,050,000	7,550,000	Support	6,550,000	8,500,000
	CVP, Shasta Division								
612	Coleman National Fish Hatchery Modification	USBR	6,347,000	1,203,321	1,500,000	1,500,000	Support	1,500,000	1,500,000
		Restor.	22,099,248						
		Total	28,446,248						
615	Clear Creek Restoration	USBR	2,152,549	667,709	100,000	100,000	Support	130,000	130,000
		Restor.	4,988,417						
		Total	7,140,966						
	CVP, Sacramento River Division								
621	Winter-Run Chinook Salmon Captive Broodstock Program	USBR		1,242,588	520,000	520,000	Support	0	520,000
		Restor.							
		USFWS							
		NOAA							
		NonFed							
		Total	12,709,800						

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
622	Hamilton City Pumping Plant Fish Facility (Glenn)(See CWC 302)	USBR	46,000,000	22,398,721	2,220,000	3,750,000	Support	800,000	800,000
623	Colusa Basin Drain	USBR	1,367,000	1,389,979	1,000,000	1,000,000	Support	0	1,000,000
624	Red Bluff Diversion Dam	USBR	12,677,096	10,369,929	600,000	600,000	Support	160,800	160,800
	Fish Passage Program	Restor.	718,683	688,456				0	
		Total	13,395,779	11,058,385					
626	Red Bluff Diversion Dam Demo. Research Facility Eval.	USBR	8,883,000	5,980,921	1,504,000	1,504,000	Support	750,000	750,000
	CVP, American River Division								
635	Auburn-Folsom South Unit	USBR	2,555,556,309	367,062,660	1,930,000	1,932,000	Support	2,049,000	2,049,000
	(Includes American River Alternative	NonFed	2,202,780						
	Study and On-going Activities)	Total	2,557,759,089						
636	Auburn-Folsom South Unit	USBR	11,000,000	1,787,736	337,000	8,500,000	Support	0	5,300,000
	(Permanent Pump Facility)	NonFed	2,400,000						
		Total	13,400,000						
	CVP, East Side Division								
640	New Melones Water Mgmt Study (Includes Temp. Control Eval)	USBR	190,000	0	0	0	Support	0	0
	CVP, Delta Division								
641	Bay-Delta Oversight (CALFED)	USBR	25,663,773	19,206,256	0	1,000,000	Support	500,000	500,000
643	Delta Support Program (IEP)	USBR	64,871,507	35,778,507	3,750,000	3,900,000	Support	4,000,000	4,000,000

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
645	Rock Slough Fish Screen	USBR	1,868,038	1,228,038	100,000	5,000,000	Support	270,000	270,000
	(Contra Costa)	NonFed	731,133	731,133	0				
		Total	2,599,171	1,959,171	100,000				
646	Suisun Marsh Protection	USBR	60,364,402	31,013,531	2,155,000	2,205,000	Support	2,643,000	2,643,000
		Restor.	750,000	750,000					
		Total	61,114,402	31,763,531					
647	South Delta Barriers	USBR	868,483	361,483	20,000	20,000	Support	92,000	92,000
648	Tracy Fish Facility Improvements	USBR	39,703,637	5,108,922	544,715	650,000	Support	1,000,000	1,000,000
		Restor.	39,743	39,743	0			0	
		NonFed	530,571	530,571	0			0	
		Total	40,273,951	5,679,236	544,715			1,000,000	
	CVP, San Joaquin Division								
651	Land Retirement	USBR	81,556,464	3,609,428	300,000	0	Support	0	0
		Restor.	25,728,594	4,427,042	5,000,000	6,846,000		3,500,000	3,500,000
		Total	107,285,058	8,036,470	5,300,000	6,846,000		3,500,000	
652	San Joaquin Basin Action Plan	USBR	9,621,852	4,506,222	1,588,105	1,443,000	Support	1,108,000	1,108,000
		Restor.	14,487,738	10,964,405	1,738,023	1,600,000		0	0
		Total	24,109,590	15,470,627	3,326,128	3,043,000		1,108,000	
653	Water Acquistion	USBR	42,114,188	6,793,964	0	0	Support	1,500,000	1,500,000
		Restor.	113,790,559	27,194,345	9,000,000	10,000,000		6,116,000	6,116,000
		Total	155,904,747	33,988,309	9,000,000	10,000,000		7,616,000	
	CVP, Friant Division								
655	Friant Upper Basin Optimization	USBR	398,322	62,322	96,000	96,000	Support	160,000	160,000
	Study	Restor.	0			0			
		Total	398,322			96,000			
	CVP, W. San Joaquin Division, San Luis Unit								
660	Arroyo Pasajero Studies	USBR	5,094,121	2,441,121	0	0	Support	0	400,000
	(Also CWC 238-Corps)	NonFed	6,343,970						
		Total	11,438,091						

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
661	Arroyo Pasajero Implementations	USBR	43,628,000	0	465,000	851,000	Support	0	400,000
662	Arroyo Pasajero(Flood Easements)	USBR	15,557,500	0	472,500	1,000,000	Support	85,000	1,100,000
663	Cantua Creek Strm Group-EIS	USBR	22,501,000	0	0	920,000	Support	0	1,900,000
665	Real-Time Drainage Mgt. Initiative	USBR	40,546,779			3,306,000	Support	4,500,000	4,500,000
	CVP, Miscellaneous Project Programs (Mid-Pacific Region)								
672	Anadromous Fish Screening Program	USBR	81,642,814	16,179,794	0	1,000,000	Support	0	0
		Restor.	35,950,846	8,549,608	2,000,000	2,000,000		2,000,000	2,000,000
		Total	117,593,660	24,729,402	2,000,000	3,000,000		2,000,000	
673	Anadromous Fish Restoration	USBR	2,926,000	0	0	0	Support	0	0
		Restor.	69,566,000	19,901,550		7,000,000		6,000,000	6,000,000
		Total	72,492,000	19,901,550		7,000,000		6,000,000	
675	Central Valley Assessment/ Monitoring Program	USBR	6,000,000	0		0	Support	0	0
		Restor.	21,212,000	3,974,201	1,500,000	1,500,000		1,500,000	1,500,000
		Total	27,212,000	3,974,201		1,500,000		1,500,000	
676	Dedicated Project Yield	Restor.	9,000,000	4,941,866	1,000,000	1,000,000	Support	1,000,000	1,000,000
677	Ecosystem/Water System Models	USBR	10,761,673	3,491,901	900,000	1,000,000	Support	1,000,000	1,000,000
		Restor.	26,841,327	1,174,785		500,000		2,667,000	2,667,000
		NonFed	0			0		0	
		Total	37,603,000	4,666,686	900,000	1,500,000		3,667,000	
679	Kaweah River Delta Corridor Enhancement Project	USBR	0	0	0	Support	Support	0	Support
680	Other CVP Impacts	Restor.	25,000,000	9,546,790	3,000,000	2,700,000	Support	2,950,000	2,950,000
684	Reservoir Storage	Restor.	650,000	213,566	50,000	50,000	Support	0	0

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
685	Refuge Water Supply	USBR	36,483,000	6,932,932	0	0	Support	239,000	239,000
		Restor.	28,288,000	5,313,184	4,000,000	4,500,000		3,549,000	3,549,000
		Total	64,771,000	12,246,116	4,000,000	4,500,000		3,788,000	
686	Refuge Wheeling Costs	USBR	14,869,000	1,003,878	0	0	Support	0	0
		Restor.	79,007,000	15,339,631	6,900,000	6,900,000		6,000,000	6,000,000
		Total	93,876,000	16,343,509	6,900,000	6,900,000		6,000,000	
689	Salmon (Spring Run) Program	USBR	1,293,293	531,131	31,000	31,000	Support	31,000	31,000
700	**CVP, Operation & Maintenance (Mid-Pacific Region)**								
701	CVP-San Luis Unit	USBR	Continuing			4,525,000	Support	4,551,000	4,551,000
703	Reclamation Law Administration	USBR	Continuing			1,380,000	Support	1,371,000	1,371,000
704	Land Resources Management Program	USBR	Continuing			1,310,000	Support	848,000	848,000
705	Cachuma Project	USBR	Continuing	1,036,247	917,000	992,000	Support	1,067,000	1,067,000
706	Orland Project	USBR	Continuing	4,476,312	570,000	570,000	Support	617,000	617,000
707	Solano Project	USBR	Continuing	25,395,698	1,938,200	2,000,000	Support	2,172,000	2,172,000
710	Matilija Creek Ecosystem Restoration								2,000,000
740	CVP, Yield Feasibility Investigation	USBR	8,332,827	1,142,821	1,890,000	2,000,000	Support	1,800,000	1,800,000
755	California Water Mgmt & Tech. Assistance			485,121	354,129	500,000	Support	1,293,000	1,293,000
800	**Loan Projects(Mid-Pacific Region)**								
801	Small Reclamation Projects Administration	USBR	Continuing	8,551	15,000	15,000	Support	15,000	15,000

CWC No.	Project			Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
802	Castroville Seawater Intrusion Project (Monterey)		USBR	14,284,000	9,264,000	2,265,000	2,600,000	Support	1,300,000	1,300,000
			Treas.	18,166,000	9,092,000		3,391,000			
		Total	Fed.	32,450,000	18,356,000		5,991,000			
			NonFed	11,049,900	11,049,900					
			Total	43,499,900	47,761,900					
803	Salinas Valley Reclamation Project (Monterey)		USBR	9,557,000	6,500,000	1,445,000	1,700,000	Support	800,000	800,000
			Treas.	10,862,000	6,205,000		1,894,000			
		Total	Fed	20,419,000	12,705,000		3,594,000			
			NonFed	6,900,000	6,900,000					
			Total	27,319,000	32,310,000					
850	Klamath Project (Oregon)		USBR		5,122,552	10,262,000	12,682,000	Support	11,185,000	12,700,000
900	**PL 102-575, Title XVI and Amended by P.L. 104-266(Mid-Pacific Region)** - ALL PROGRAMS									
901	Del Norte County/ Crescent City Wastewater Study		USBR	1,429,210	1,369,414	59,756	0	Support	0	Support
902	Fort Bragg Reclamation Study		USBR	809,478	770,323	39,155	0	Support	0	Support
910	Sacramento Reclamation Reuse		USBR	1,156,825	322,400	234,425	0	Support	0	Support
915	San Joaquin Area [Tracy] (San Joaquin)						0	Support		Support
920	San Francisco Area Water Reclamation Study (General Investigation)		USBR	4,210,170	4,041,904	168,266	0	Support	0	1,000,000
			NonFed	4,210,170						
			Total	8,420,340						
925	Southern Alameda County Water Reuse Project							Support		Support
930	San Jose Area Water Reclamation and Reuse Program (Construction)		USBR	109,959,000	13,027,656	2,841,024	3,000,000	Support	3,500,000	10,000,000
			NonFed	370,041,000						
			Total	480,000,000						
935	Watsonville Area						0	Support	0	Support

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
940	San Pablo Baylands Water Reuse (Sonoma)					0	Support	0	Support
1000	**PL 102-575, Title XVI and Amended by P.L. 104-266 (Lower Colorado Region)** - ALL PROGRAMS								
1001	Water Recycling Research and Development		Continuing	0	2,214,000		Support	1,460,000	2,500,000
1002	Southern California Comprehensive Water Reclamation and Reuse	USBR	3,492,000	3,453,134	0	0	Support	0	0
		NonFed	3,492,000						
		Total	6,984,000						
1004	Calleguas Municipal Water District Recycling Project	USBR	20,000,000		1,500,000	1,500,000	Support	500,000	500,000
		NonFed	72,660,000	0					
		Total	92,660,000						
1006	Pasadena Reclaimed Water	USBR	5,750,000	0	0	0	Support	0	0
		NonFed	17,250,000						
		Total	23,000,000						
1007	L.A. Area Water Reclamation and Reuse (Includes West Basin, East Valley and Terminal Island)	USBR	69,970,000	61,712,233	7,500,000	7,500,000	Support	740,000	740,000
		NonFed	243,383,987						
		Total	313,353,987						
1008	Long Beach Desalination Research and Development Project	USBR	15,100,000	0	0	0	Support	0	Support
		NonFed	15,100,000						
		Total	30,200,000						
1009	Hi Desert Water District, Yucca Valley	USBR	3,790,000	0	0	0	Support	0	Support
		NonFed	11,370,000						
		Total	15,160,000						

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
1010	Orange County Regional Water Reclamation Project - Phase I	USBR	20,000,000	0	1,500,000	1,500,000	Support	2,000,000	2,000,000
		NonFed	242,060,000						
		Total	262,060,000						
1011	San Juan Basin Groundwater Management Program (Orange)	USBR	3,750,000	0	0	0	Support	0	Support
		NonFed	11,250,000						
		Total	15,000,000						
1012	San Gabriel Basin Project (Includes San Gabriel Basin, Demo, Rio Hondo & San Gab Valley Wtr Recl.)	USBR	38,090,000	23,885,424	1,000,000	2,000,000	Support	2,000,000	2,000,000
		NonFed	128,821,000						
		Total	166,911,000						
1013	San Diego(North)County Area Recycling Project-Encina Basin, San Elijo, and Olivenhain)	USBR	20,000,000	0	1,500,000	1,500,000	Support	2,000,000	2,000,000
		NonFed	70,690,000						
		Total	90,690,000						
1014	San Diego Area Reclamation (Includes San Diego, Escondido, Poway, Padre Dam MWD, Otay WD and San Diego County Water Auth, Sweetwater Auth, Tia JuanaVWD)	USBR	172,590,000	41,759,200	8,512,000	10,600,000	Support	7,500,000	10,600,000
		NonFed	517,770,000						
		Total	690,360,000						
1015	Mission Basin(Oceanside)Brackish Groundwater Desalting Research & Development Project(San Diego)	USBR	2,160,000	0	1,500,000	0	Support	0	1,500,000
		NonFed	6,480,000						
		Total	8,640,000						
1016	Long Beach Area Recycling Project Water Distribution Expansion (includes Long Beach & Alamitos Barrier)	USBR	13,970,000	0	1,500,000	1,500,000	Support	2,000,000	2,000,000
		NonFed	41,910,000						
		Total	55,880,000						
1017	Castaic Lake Water Agency Recycled Water Program								Support Authorization

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
Lower Colorado River Water Management and Technical Assistance Program									
1020	Imperial Valley Water Reclamation and Reuse Study	USBR	500,000	402,460	0	0	Support	0	Support
		NonFed	500,000						
		Total	1,000,000						
Southern California Water Management and Technical Assistance Program									
1031	Southern California Coastal Water Supply Study	USBR	750,000	664,554	25,000	25,000	Support	0	Support
		NonFed	750,000						
		Total	1,500,000						
1033	Mystic Lake Watershed Mgmt Study	USBR	550,000	0	10,000	200,000	Support	100,000	100,000
		NonFed	550,000						
		Total	1,100,000						
1034	Southern California Water Recycling Project Initiative	USBR	1,700,000	0	115,000	200,000	Support	400,000	400,000
		NonFed	1,700,000						
		Total	3,400,000						
1035	New Study under So. California Investigation Program Owens Valley Pauite Reservation	USBR	174,000	0	50,000		Support	124,000	124,000
		NonFed	174,000						
		Total	348,000						
1100 Other Water and Related Resource Programs									
1101	Colorado River Water Quality Improvement Program	USBR	Continuing	7,891,736	75,000	75,000	Support	150,000	150,000
1103	General Planning	USBR	Continuing	1,717,170	340,000	425,000	Support	388,000	388,000
1108	Salton Sea Research Project	USBR	10,000,000	2,475,132	800,000	1,000,000	Support	1,000,000	1,000,000
		NonFed	10,000,000						
		Total	20,000,000						

CWC No.	Project			Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
1200 Loan Projects (Lower Colorado Region)										
1201	Small Reclamation Projects Administration			Continuing	4,272,410	170,000	170,000	Support	200,000	200,000
1203	Chino Basin Desalination		USBR	10,249,000	10,132,000	117,000	117,000	Support	0	0
	(Santa Ana Watershed		Treas.	21,782,000	21,014,000	768,000	768,000		0	0
	Project Authority)	Total	Fed.	32,031,000			885,000			
			NonFed	15,623,000						
			Total	47,654,000						
1204	San Sevaine Creek Water Project		USBR	28,100,000	8,312,000	7,369,000	6,408,000	Support	6,844,000	6,844,000
	(San Bernardino, Riverside)		Treas.	18,900,000	3,952,000	4,322,000	3,772,000		4,366,000	4,366,000
	(Funding to commence	Total	Fed.	47,000,000			10,180,000			
	in FY 98)		NonFed	33,721,000						
			Total	80,721,000						
1205	Temescal Valley Project		USBR	5,327,000	4,152,000	11,175,000	1,175,000	Support	0	0
	(Elsinore Valley MWD)		Treas.	16,929,000	8,369,000	8,560,000	8,560,000		0	0
	(Riverside)	Total	Fed.	22,256,000			9,735,000			
			NonFed	10,659,000						
			Total	32,915,000						
1300 Colorado River Salinity Control Program										
1302	Title I Division (Lower Colorado)		USBR	586,828,286	465,961,131	10,092,000	13,092,000	Support	11,383,000	11,383,000
1304	Basinwide Program		USBR	to be determined	38,080,961	12,261,000	17,500,000	Support	10,850,000	17,500,000
	USDA Environmental Quality Incentive Program (Colorado River Basin Report Language)							Support	325,000,000	325,000,000
1305	Colorado River Salinity Control Program						12,000,000	Support	12,000,000	12,000,000

CWC No.	Project		Estimated Project Costs	Actual Costs Thru 9/30/99	Allocation for FY 2000	CWC Final Recomm. FY 2000	CWC Prelim. Recomm. FY 2001	President's Budget FY 2001	CWC Final Recomm. FY 2001
BLM Mgmt. of Land & Resources								39,011,000	39,011,000
	Soil, Water and Air Mgmt.								
1310	Colorado Rvr. Salinity Control Program					5,200,000	Support	800,000	5,200,000
1400 Colorado River Endangered Species Conservation and Recovery Projects (Lower Colorado only)									
1401	Endangered Species Conservation and Recovery Projects (LC only)	USBR	Continuing	16,223,032	1,958,000	1,958,000	Support	1,464,000	1,464,000
1450	**Lower Colorado River Operation Program**	USBR	Continuing		8,540,000		Support	13,729,000	13,729,000
1451	Fish & Wildlife Management Development (1451 is part of 1450)	USBR	Continuing			8,824,000	Support	8,981,000	8,981,000
1452	Water and Energy Lower Colorado River Operations Program (1452 is part of 1450)	USBR	continuing				Support	4,748,000	4,748,000
1500 U.S. Fish and Wildlife Service (Interior Appropriations Subcommittee)									
1500	Bay-Delta Ecosystem Restoration (CALFED)(Also see CWC 90 & 500)	USFWS				1,300,000	Support		Support
1600 U.S. Coast Guard (Transportation Appropriations Subcommittee)									
1600	Ballast Water Control Programs					Support	Support		Support
1700 U.S. Environmental Protection Agency (VA-HUD and Independent Agencies Appropriations Subcommittee)									
1701	Sonoma County Water Agency						Support		Support
1800 U.S. Department of Commerce									
1801	Salmon Recovery Project for 4 States					100,000,000	Support		Support

PREPARED STATEMENT OF THE CALIFORNIA RESOURCES AGENCY RECLAMATION BOARD

[In thousands of dollars]

Corps of Engineers' Projects	President's budget	Board recommends
GENERAL INVESTIGATIONS—SURVEYS:		
Sacramento and San Joaquin River Basins Comprehensive Study	$1,500	$3,200
Lower Cache Creek, Yolo/Woodland and Vicinity	300	500
San Joaquin River Basin:		
Corral Hollow Creek	65	140
Frazier Creek	65	140
Poso Creek (Kern)	150	400
PRECONSTRUCTION ENGINEERING AND DESIGN:		
American River Watershed	3,285	3,285
Yuba River	400	500
South Sacramento County Streams	200	3,000
San Joaquin River Basin—Tule River	400	400
CONSTRUCTION—GENERAL:		
Sacramento River Bank Protection	3,300	5,000
Mid-Valley Area Levee Reconstruction	2,000	2,000
Marysville/Yuba City Levee Reconstruction	760	760
West Sacramento Project	1,775	1,775
American River Watershed (Levee Improvements)	10,000	13,000
American River Watershed (Folsom Dam Modifications)	5,000	12,000
Kaweah River (Tulare)	500	3,000
Lower Sacramento Area Levee Reconstruction	1,485	1,485
Upper Sacramento Area Levee Reconstruction	1,665	1,665
Merced County Streams	500	.....
San Joaquin Basin—Stockton Metropolitan (Section 211)	.....	10,000

THE RECLAMATION BOARD'S RECOMMENDATIONS

The Reclamation Board, as the state agency which furnishes required local assurances for a majority of the federal flood control projects in California's Central Valley, respectfully submits this statement of support for U.S. Army Corps of Engineers flood control projects.

The Board in general supports the President's budget for federal flood control projects in the California Central Valley. The projects described below are of particular importance to the health, safety, and well-being of Central Valley residents and are especially important to the Board that they are started and/or kept on schedule.

GENERAL INVESTIGATIONS—SURVEYS

Sacramento and San Joaquin River Basins Comprehensive Study

The study area includes the entire Sacramento River Basin and San Joaquin River Basin in Northern and Central California, respectively. Local, state and federal water resources agencies support a coordinated multiobjective investigation to balance flood damage reduction, environmental restoration, and other water resources proposed along the Rivers. The Feasibility Cost-Sharing Agreement was executed in February 1998. An interim status report was released in April 1999. The Study is scheduled to be complete in September 2002. The Board recommends funding to continue this Study.

Lower Cache Creek, Yolo/Woodland and Vicinity

A feasibility study is evaluating increased levels of flood protection for the City of Woodland and the town of Yolo. Completion is scheduled for June 2004. The Board supports funding to continue the feasibility study.

San Joaquin River Basin

This survey, authorized in 1964, is a study of the San Joaquin River and its tributaries in regard to flood control measures. The following are interim study proposals.

Corral Hollow Creek

A reconnaissance study is being conducted to evaluate increased flood protection for the City of Tracy and major water conveyance and transportation facilities in San Joaquin County. The Board recommends funding to initiate the feasibility study.

Frazier Creek

A reconnaissance study has been initiated to evaluate flood control alternatives for the town of Strathmore in Tulare County. The Board recommends funding to initiate the feasibility study.

Poso Creek (Kern)

A reconnaissance study was conducted to evaluate increased flood protection for the town of McFarland in Kern County. A feasibility study will be initiated in July 2000. The Board recommends funding to continue the feasibility study.

PRECONSTRUCTION ENGINEERING AND DESIGN

American River Watershed

The Sacramento urban area has only a 77-year level of protection from flooding by the American River. Although incremental actions have occurred, a long-term plan for high levels of protection must be developed and implemented. The Board recommends funding to continue long-term planning.

Yuba River

The Marysville and Yuba City areas have experienced seven major floods. A feasibility study was completed in April 1998. The Board recommends funding to continue preconstruction engineering and design.

South Sacramento County Streams

The completed feasibility report recommends levee and channel improvements to protect the urbanized area of south Sacramento. The Board recommends funding for continued PED.

San Joaquin River Basin—Tule River

The proposed enlargement of Success Dam on the Tule River will improve flood protection for the City of Porterville and surrounding community. The Board recommends funding to continue PED.

CONSTRUCTION—GENERAL

Sacramento River Bank Protection

The project, authorized in 1960, is a long-range federal/state effort to preserve the existing project levee system along 192 miles of the Sacramento River. The Sacramento River Bank Protection Project work consists of providing some form of bank stabilization at those points which are identified each year as the most critical. The Board recommends funding to continue construction.

Mid-Valley Area Levee Reconstruction

An evaluation of about 240 miles of the Sacramento River Flood Control Project levees in the Sacramento Mid-Valley area identified about 20 miles of levees that are structurally deficient and require reconstruction. The Board recommends funding to continue construction.

Marysville/Yuba City Levee Reconstruction

This program will reconstruct 44 miles of the 134 miles of federally authorized levees that protect the Marysville/Yuba City area. The first of three construction contracts was awarded in July 1995. Flooding in 1997 demonstrated the need to extend the work sites, modify the design, and investigate new sites in the project area. The Board recommends funding to continue construction.

West Sacramento Project

The Board is the nonfederal sponsor for the West Sacramento Flood Control Project that was authorized for construction by WRDA 1992. The Board supports funding to complete construction.

American River Watershed (Levee Improvements)

The 5 miles of levee improvements were authorized in WRDA 1996 as part of the Common Elements Project. This Project consists of levee raising and strengthening

that would be common to any long-term project selected for the American River. The Board recommends funding to complete construction.

American River Watershed (Folsom Dam Modifications)

Modifications to the existing outlets of Folsom Dam to provide for earlier and higher flood releases were authorized in WRDA 1996. The Board recommends funding to initiate construction.

Kaweah River

This project would provide flood protection to the communities of Visalia, Farmersville, Tulare, Ivanhoe, and Goshen. The Board recommends funding to continue construction.

Lower Sacramento Area Levee Reconstruction

An evaluation of about 295 miles of the Sacramento River Flood Control Project levees in the lower Sacramento Valley area identified about 47 miles of levees that are structurally deficient. The project includes reconstructing about 2 miles of these levees. The Board recommends funding to complete construction.

Upper Sacramento Area Levee Reconstruction

Federally authorized flood control levees in the upper Sacramento Area were evaluated and 12 miles were determined to be deficient and requiring reconstruction. The Board recommends funding to complete construction.

Merced County Streams

This project provides increased levels of flood protection to the Cities of Merced and Atwater and associated urban areas. The first phase of construction has been completed. The Board recommends funding to complete the General Evaluation Report.

San Joaquin Basin-Stockton Metropolitan (Section 211)

Construction of the flood control project has been completed by the local sponsors. The Board recommends funding to reimburse the federal cost-share portion.

PREPARED STATEMENT OF THE COUNTY OF SANTA CRUZ

Mr. Chairman and Members of the Committee, on behalf of the County of Santa Cruz, California, we are requesting $1.9 million from your committee in fiscal year 2001 for the Pajaro River at Watsonville Flood Control Project to be conducted by the U.S. Army Corps of Engineers. While the President's budget request does not reflect this funding level, the Corps San Francisco District has recently indicated, based on recent changes to project, that $1.9 million for Preliminary Engineering and Design (PED) is its capability for this project in fiscal year 2001.

The substantial difference in the Administration budget request of $600,000 and the present capability of the Corps of $1.9 million is due in large part to the recent agreement with the Corps to merge the flood control design measures along the Salsipuedes and Corralitos Creek tributaries with the Pajaro River mainstem project. This decision, which both the Corps and project sponsors agree has great merit, increases the size of the project by providing greater protection to those in the Pajaro River Basin.

By way of background, areas of Santa Cruz and Monterey Counties along the Pajaro River have been ravaged by flood events for decades. A 1963 report by the Corps concluded that the Pajaro River levee system constructed in 1949 was "inadequate," providing only 25-year protection along the Pajaro River and 7-year protection along two Pajaro tributaries, the Salsipuedes and Corralitos Creeks, instead of the 100-year protection that was intended. As a result, the Flood Control Act of 1966 authorized the Pajaro River Flood Control Project, as did the Water Resources Development Act of 1986. However, to date, no work on the project has been conducted pursuant to those authorizations.

Over the years, the Corps of Engineers, FEMA, and other federal, state, and local agencies have spent vast sums to provide emergency assistance, disaster relief, and recovery services to the Santa Cruz and Monterey County areas in the wake of these damaging floods. The Corps alone, for example, has spent $18 million on flood response efforts between 1995 and 1998. Even more recently, storm events of the past several weeks have also resulted in flooding along the Salsipuedes and Corralitos. In addition, the numerous lawsuits that are filed in the wake of these floods—$50 million in the case of a 1995 flood—threaten to cripple local flood control agencies.

It is for these reasons that we believe that work on the Pajaro River Flood Control project should begin as soon as possible. Residents of Santa Cruz and Monterey Counties continue to live in fear that lives, businesses, and valuable agricultural land will be lost in a 100-year flood from which they were to be protected from over 30 years ago. In addition to Santa Cruz County, area supporters of this project include: Monterey, San Benito, and Santa Clara Counties; the cities of Watsonville, Gilroy, Morgan Hill, and Hollister; and the Santa Cruz County Flood Control and Water Conservation District, Santa Clara Valley Water District, and San Benito Water District.

Both the Corps and project sponsors believe that $1.9 million is necessary to proceed expeditiously with the project. We thank you for your consideration of this vital request and urge you and your colleagues to support the full amount when crafting your fiscal year 2001 Energy and Water Development appropriations bill.

PREPARED STATEMENT OF THE WHITEWATER RIVER BASIN

This project is the result of the Whitewater River Basin, California, Reconnaissance Report (USACE 1992). The project feasibility study is now being completed and the U.S. Army Corps of Engineers (Corps) has identified an alternative with a high benefit/cost ratio. The U.S. Fish and Wildlife Service has reviewed the alternative and in a letter to the Corps, Los Angeles District, indicated "that the future with project conditions will likely be better than the future without project conditions for the biological resources in the area."

The project will provide flood protection for the majority of the Thousand Palms unincorporated area in northern Coachella Valley.

Flood protection below the Indio Hills in this alternative consists of three levees described below:

—Transmission Corridor Levee: This levee would run in an east-southeasterly direction, starting just south of the mouth of Westwide Canyon and then following the transmission corridor to the western Coachella Valley Fringe-Toed Lizard Preserve boundary.

—Wind Corridor Levee: This levee would run along the western and southwestern boundary of the Preserve (on the south side of the wind corridor).

—Cook Street Levee: This levee would run along the north side of Interstate 10 and across the southern boundary of the Preserve (the same as with the other alternatives).

In addition to the right-of-way acreage, this project would require purchase of an additional 700 acres of floodway. This land (running along the upslope side of the levees) would be purchased by the Corps in order to prevent flow along the levees from damaging private property.

In order to continue this project, we need two congressional actions this session. First, in the Water Resources Development Act of 2000, language similar to the following needs to be added:

—Whitewater River Basin (Thousand Palms), California

—The project for flood control and incidental endangered species preservation, Whitewater River Basin (Thousand Palms), California, is authorized for construction, subject to a Chief of Engineers Report completed no later than December 31, 2000, at an estimated Federal cost of $16,900,000 and an estimated total cost of $26,000,000. The feasibility analysis will include high priority flood damage reduction and reduced future flood proofing costs for economic justification.

Secondly, in the Energy and Water Appropriations Act, language similar to the following needs to be added:

—Whitewater River Basin (Thousand Palms), California

—The Secretary of the Army, acting through the Chief of Engineers, is directed to initiate Preconstruction Engineering and Design for the Whitewater River Basin (Thousand Palms), California Project. Funds of $500,000 are provided for this purpose.

This project has full local support and your assistance in getting the project to the preliminary engineering and design phase is greatly appreciated.

PREPARED STATEMENT OF THE COACHELLA VALLEY WATER DISTRICT

The Coachella Valley Water District, located in Riverside County, California, is the local sponsor of a federal project authorized in the Water Resources Development Act of 1999 under Section 212, Flood Mitigation and Riverine Restoration Pilot

Program. Section 212 lists priority projects for the new program and the Coachella Valley, Riverside County, California Project is shown as Priority No. 2.

The project as proposed would consist of developing a wetlands habitat area at the delta where the Coachella Valley Stormwater Channel (Whitewater River) feeds into the Salton Sea. It is anticipated that the project will widen the levees of the stormwater channel allowing a natural delta area to form. This would allow the hydraulic grade line to be lowered thereby alleviating sediment deposition in the area. This would lessen flood risk in the area as well as upstream.

The habitat created by the project would provide a nesting area for several endangered species of migratory birds. The Salton Sea is a key stopover on the Pacific Flyway and this project would enhance the nesting habitat.

Funds to conduct the studies required to implement this project have not yet been appropriated. The district is requesting that language be added to the Energy and Water Appropriations Bill of 2000 that will allow the U.S. Army Corps of Engineers to begin work in October 2000.

Draft language for the bill would be as follows:

—Coachella Valley, Riverside County, California

—The Secretary of the Army, acting through the Chief of Engineers, is directed to complete a reconnaissance study for Flood Mitigation and Riverine Restoration, Coachella Valley, Riverside County, California, as authorized in section 212 of the Water Resources Development Act of 1999. Funds of $100,000 are provided for this purpose.

Thank you in advance for your support on this important project.

PREPARED STATEMENT OF THE SANTA CLARA VALLEY WATER DISTRICT

CALFED BAY-DELTA PROGRAM

Background.—In an average year, half of Santa Clara County's water supply is imported from the San Francisco Bay/Sacramento-San Joaquin Delta estuary (Bay-Delta) watersheds through three water projects: The State Water Project, the federal Central Valley Project, and San Francisco's Hetch Hetchy Project. In conjunction with locally-developed water, this water supply supports 1.7 million residents in Santa Clara County and the most important high-tech center in the world. In average to wet years, there is enough water to meet the county's long-term needs. In dry years, however, the county could face a water supply shortage of as much as 100,000 acre-feet per year, or roughly 20 percent of the expected demand. In addition to shortages due to hydrologic variations, the county's imported supplies have been reduced due to regulatory restrictions placed on the operation of the state and federal water projects.

There are also water quality problems associated with using Bay-Delta water as a drinking water supply. Organic materials and pollutants discharged into the Delta, together with salt water mixing in from San Francisco Bay, have the potential to create disinfection-by-products that are carcinogenic and pose reproductive health concerns.

Santa Clara County's imported supplies are also vulnerable to extended outages due to catastrophic failures such as major earthquakes and flooding. As demonstrated by the 1997 flooding in Central Valley, the levee systems can fail and the water quality at the water project intakes in the Delta can be degraded to such an extent that the projects cannot pump from the Delta.

Project Synopsis.—The CALFED Bay-Delta Program is an unprecedented, cooperative effort among federal, state, and local agencies to restore the Bay-Delta. With input from urban, agricultural, environmental, fishing, and business interests, and the general public, CALFED is developing a comprehensive, long-term plan to address ecosystem and water management issues in the Bay-Delta.

Restoring the Bay-Delta ecosystem is important not only because of its significance as an environmental resource, but also because failing to do so will stall efforts to improve water supply reliability and water quality for millions of Californians and the state's $700 billion economy and job base.

Although the CALFED Bay-Delta Program is a long-range planning process, ecosystem restoration is an immediate priority because of the substantial lead time needed to produce ecological benefits. Species in the Bay-Delta continue to be proposed for listing under the Endangered Species Act. Recovery efforts cannot begin until adequate funding becomes available to implement the array of critical ecosystem restoration and water quality projects.

Fiscal year 2000 Funding.—$60 million was authorized in fiscal year 2000 for CALFED Bay-Delta ecosystem restoration and non-ecosystem improvements.

Fiscal year 2001 Funding Recommendation.—It is requested that the Congressional Committee support the $60 million included in the Administration's fiscal year 2001 budget to finance Stage 1 implementation, including ecosystem restoration in the Bay-Delta, critical improvements in water supply and water quality, and levee stability.

GUADALUPE RIVER PROJECT

Background.—The Guadalupe River is a major waterway flowing through a highly developed area of San Jose, California. A major flood would damage homes and businesses in the heart of Silicon Valley. Historically, the river has flooded downtown San Jose and Alviso community. According to the 1991 General Design Memorandum, estimated damages from a 1 percent flood in the urban center of San Jose are over $526 million. The Guadalupe River overflowed in February 1986, January 1995, and March 1995, damaging homes and businesses in the St. John and Pleasant Street areas of downtown San Jose. In March 1995, heavy rains resulted in breakouts along the river that flooded approximately 300 homes and business.

Project Synopsis.—In 1971, the local community requested that the U.S. Army Corps of Engineers (Corps) reactivate its earlier study. Since 1972, substantial technical and financial assistance have been provided by the local community through the Santa Clara Valley Water District in an effort to accelerate the project's completion. To date, more than $85.8 million in local funds have been spent on planning, design, land purchases, and construction in the Corps' project reach.

The Guadalupe River Project received authorization for construction under the Water Resources Development Act of 1986; the General Design Memorandum was completed in 1992, the local cooperative agreement was executed in March 1992, the General Design Memorandum was revised in 1993, construction of the first phase of the project was completed in August 1994, construction of the second phase was completed in August 1996. Project construction was temporarily halted due to environmental concerns.

To achieve a successful, long-term resolution to the issues of flood protection, environmental mitigation, avoidance of environmental impacts, and project maintenance costs, a multi-agency "Guadalupe Flood Control Project Collaborative" was created in 1997. A key outcome of the collaborative process was the signing of the Dispute Resolution Memorandum in 1998, which resolved major mitigation issues and allowed the project to proceed. Completion of the last phase of flood protection construction is estimated in 2002 and is dependant on timely federal funding and continuing successful mitigation issue resolution.

Fiscal year 2000 Funding.—$5 million was authorized in fiscal year 2000 to continue Guadalupe River Project construction.

Fiscal year 2001 Funding Recommendation.—Based upon the need to continue construction to provide critical flood protection for downtown San Jose and the community of Alviso, it is requested that the Congressional Committee support an appropriation add-on of $10.5 million, in addition to the $3.5 million in the Administration's fiscal year 2001 budget for a total of $14 million to continue the construction and mitigation work on the Guadalupe River Flood Protection Project.

UPPER GUADALUPE RIVER PROJECT

Background.—The Guadalupe River is one of two major waterways flowing through a highly urbanized area of Santa Clara County, California, the heart of Silicon Valley. Historically, the river has flooded the central district and southern areas of San Jose. According to U.S. Army Corps of Engineers (Corps) 1998 feasibility study, severe flooding in the upper Guadalupe River's densely populated residential floodplain south of Interstate 280 would result from a 100-year flooding event and potentially cause $280 million in damages.

The probability of a large flood occurring before implementation of flood prevention measures is high. The upper Guadalupe River overflowed in March 1982, January 1983, February 1986, January 1995, March 1995, and February 1998, causing damage to several residences and businesses in the Alma Avenue and Willow Street areas. The 1995 floods in January and March, as well as in February 1998, closed Highway 87 and the parallel light-rail line, a major commute artery.

Project Synopsis.—In 1971, the Santa Clara Valley Water District (District) requested the Corps to reactivate its earlier study. From 1971 to 1980, the Corps established the economic feasibility and federal interest in the Guadalupe River only between Interstate 880 and Interstate 280. Following the 1982 and 1983 floods, the District requested that the Corps reopen its study of the upper Guadalupe River upstream of Interstate 280. The Corps completed a reconnaissance study in November 1989, which established an economically justifiable solution for flood protection in

this reach. The report recommended proceeding to the feasibility study phase, which began in 1990. In January 1997, the Corps determined that the National Economic Development Plan would be a 2 percent or 50-year level of flood protection rather than the 1 percent or 100-year level. The District strongly emphasized overriding the National Economic Development Plan determination, providing compelling reasons for using the higher 1 percent or 100-year level of protection. In 1998, the Acting Secretary of the Army did not concur to change the basis of cost sharing from the National Economic Development Plan 50-year plan to the locally preferred 100-year plan, resulting in a project that will provide less flood protection, and therefore, be unable to reduce flood insurance requirements and reimbursements, as well as eliminate recreational benefits and increase environmental impacts. Based on Congressional delegation requests, the Assistant Secretary of the Army has directed the Corps to revise the Chief's Report to reflect more significant federal responsibility. The Corps feasibility study determined the cost of the locally preferred 100-year plan is $153 million and the Corps National Economic Development Plan 50-year plan is $98 million. The District has requested that the costs of providing 50-year and 100-year flood protection be analyzed again during the preconstruction engineering design phase for the determination of the National Economic Development Plan. The federal cost share has yet to be determined. Project cost sharing will be reconsidered for further federal responsibility in the Water Resources Development Act of 2000. The project was approved for construction by the Water Resources Development Act of 1999 (Section 101).

Fiscal year 2000 Funding.—$300,000 was authorized in fiscal year 2000 for the Upper Guadalupe River Project to proceed with preconstruction engineering and design.

Fiscal year 2001 Funding Recommendation.—Based upon the high risk of flood damage from the upper Guadalupe River and the need to continue preconstruction engineering and design, it is requested that the Congressional Committee support the $500,000 in the Administration's fiscal year 2001 budget for the Upper Guadalupe River Flood Protection Project.

UPPER PENITENCIA CREEK PROJECT

Background.—The Upper Penitencia Creek Watershed is located in northeast Santa Clara County, California, near the southern end of the San Francisco Bay. In the last two decades, the creek has flooded in 1980, 1982, 1983, 1986, 1995, and 1998. The January 1995 flood damaged a commercial nursery, a condominium complex, and a business park. The February 1998 flood also damaged many homes, businesses, and surface streets.

The proposed project on Upper Penitencia Creek, from the Coyote Creek confluence to Dorel Drive, will protect portions of the cities of San Jose and Milpitas. The floodplain is completely urbanized; undeveloped land is limited to a few scattered agricultural parcels and a corridor along Upper Penitencia Creek. Based on the U.S. Army Corps of Engineers' (Corps) 1995 reconnaissance report, 4,300 buildings in the cities of San Jose and Milpitas are located in the flood prone area, 1,900 of which will have water entering the first floor. The estimated damages from a 1 percent or 100-year flood exceed $121 million.

Study Synopsis.—Under authority of the Watershed Protection and Flood Prevention Act (PL 83–566), the Natural Resources Conservation Service completed an economic feasibility study (watershed plan) for constructing flood damage reduction facilities on Upper Penitencia Creek. Following the 1990 U.S. Department of Agriculture Farm Bill, the Natural Resources Conservation Service watershed plan stalled due to the very high ratio of potential urban development flood damage compared to agricultural damage in the project area.

In January 1993 the Santa Clara Valley Water District (District) requested the Corps proceed with a reconnaissance study in the 1994 fiscal year while the Natural Resources Conservation Service plan was on hold. Funds were appropriated by Congress for fiscal year 1995 and the Corps started the reconnaissance study in October 1994. The reconnaissance report was completed in July 1995, with the recommendation to proceed with the feasibility study phase. The feasibility study, initiated in February 1998, is scheduled for completion in 2002.

Advance Construction.—To accelerate project implementation, the District is intending to submit a Section 104 application to the Corps for advance approval to construct a portion of the project. The advance construction would be for a 2,500 -foot long section of bypass channel between Coyote Creek and King Road. If approved, the District would commence construction on this portion of the project in 2001.

Fiscal year 2000 Funding.—$250,000 was authorized in fiscal year 2000 for the Upper Penitencia Creek Flood Protection Project for project investigation.

Fiscal year 2001 Funding Recommendation.—Based upon the high risk of flood damage from the Upper Penitencia Creek and the need to proceed with the feasibility study, it is requested that the Congressional Committee support $300,000 in the Administration's fiscal year 2001 Budget for the Upper Penitencia Creek Flood Protection Project.

LLAGAS CREEK PROJECT

Background.—The Llagas Creek Watershed is located in southern Santa Clara County, California, serving the communities of Gilroy, Morgan Hill and San Martin. Historically, Llagas Creek has flooded in 1937, 1955, 1958, 1962, 1963, 1969, 1982, 1986, 1996, 1997, and 1998. The 1997 and 1998 floods damaged many homes, businesses, and a recreational vehicle park located in areas of Morgan Hill and San Martin. These are areas where flood protection is proposed. Overall, the proposed project will protect the floodplain from a 1 percent flood affecting more than 1,100 residential buildings, 500 commercial buildings, and 1,300 acres of agricultural land.

Project Synopsis.—Under authority of the Watershed Protection and Flood Prevention Act (PL–566), the Natural Resources Conservation Service completed an economic feasibility study in 1982 for constructing flood damage reduction facilities on Llagas Creek. The Natural Resources Conservation Service completed construction of the last segment of the channel for Lower Llagas Creek in 1994, providing protection to the project area in Gilroy. The Santa Clara Valley Water District (District) is currently updating the 1982 environmental assessment work and the engineering design for the project areas in Morgan Hill and San Martin. The engineering design is being updated to protect and improve creek water quality and to preserve and enhance the creek's habitat, fish, and wildlife while satisfying current environmental and regulatory requirement. Significant issues include the presence of additional endangered species including the red-legged frog and steelhead, listing of the area as probable critical habitat for steelhead, and more extensive riparian habitat than were considered in 1982.

Until recently, the Llagas Creek Project was funded through the traditional PL–566 federal project funding agreement with the Natural Resources Conservation Service paying for channel improvements and the District paying local costs including utility relocation, bridge construction, and right of way acquisition. Due to a steady decrease since 1985 of annual PL–566 appropriations, the Llagas Creek Project has not received adequate funding from U.S. Department of Agriculture to complete the PL–566 project. To remedy this situation, the District worked with congressional representatives to transfer the construction authority from the Department of Agriculture to the U.S. Army Corps of Engineers (Corps) under the Water Resources Development Act of 1999 (Section 501). An initial budget of $250,000 was appropriated for the Corps planning and design.

Fiscal year 2000 Funding.—An initial $250,000 was appropriated in fiscal year 2000.

Fiscal year 2001 Funding Recommendation.—Based upon the high risk of flood damage from Llagas Creek, it is requested that the Congressional Committee support the addition of $760,000 to the $240,000 included in the Administration's fiscal year 2001 budget, for a total of $1 million for planning and design for the Llagas Creek Project.

SANTA CLARA BASIN WATERSHED MANAGEMENT INITIATIVE

Background.—The Santa Clara Basin Watershed Management Initiative (Initiative) was spearheaded in 1996 by the U.S. Environmental Protection Agency, the State Water Resources Control Board, and the San Francisco Bay Regional Water Quality Control Board for the purpose of establishing a practical management process to oversee the effort to balance natural systems with urban development in the Santa Clara Basin. Recognizing the importance of quality of life and diversity, the Initiative's goal is to establish an on-going process of managing activities and natural processes to maximize benefits and minimize adverse environmental impacts for the benefit of the community as a whole. The Santa Clara Basin watershed includes areas in northern Santa Clara County which drain into San Francisco Bay, and portions of Alameda and San Mateo counties.

The Initiative addresses the integration of activities within the watershed while focusing on water quality protection. Some of the specific issues being addressed include land use and development, water supply, flood management, environmental restoration, and the regulatory process.

The Santa Clara Valley Water District is one of many stakeholders who continue to demonstrate commitment to this multi-year effort by providing funds and actively participating with the Initiative Core and Working Groups. Providing direction, the Core Group includes representatives of the business community, local government, environmental groups, agriculture, resource and regulatory agencies, and other interested stakeholders.

The 4-year planning phase began in 1998 and will result in the development of four major reports focused on the effective management of resources to improve and protect water quality and the aquatic habitat of the Santa Clara Basin. The first of the four reports will be the Watershed Characteristics Report which will provide a description of the physical and political characteristics of the Santa Clara Basin. This report will be followed by the Watershed Assessment Report, a preliminary assessment of the watershed's condition based on available data. The Watershed Characteristics and Assessment Reports, are scheduled for public review in April and December 2000 respectively, will provide a basis for the development of the Alternatives Watershed Management Report which will present alternatives to managing the watershed. The target date for public review of the Alternatives Watershed Management Report is in June 2001. The final product of the planning phase will be a comprehensive Watershed Action Plan, incorporating stakeholder input and extensive public outreach, intended to guide watershed activities as the Initiative moves into its implementation phase.

Section 503 of the 1996 Water Resources Development Act, authorizes the U.S. Army Corps of Engineers (Corps) to provide technical and planning assistance in the development of a watershed plan for the Santa Clara Valley. The Initiative has progressed to the point where the Corps' participation is now necessary for continuing the watershed assessment and addressing pressing regulatory issues. Due to inadequate funding of the Section 503 program in recent years, the District has requested the Corps to be included in the Section 206 Aquatic Ecosystem Restoration Program.

Fiscal year 2000 Funding.—No federal appropriation was authorized in fiscal year 2000 for the Initiative.

Fiscal year 2001 Funding Recommendation.—In order to continue the Initiative's progress to date, it is requested that the Congressional Committee support $300,000 in funding from the Section 206 Aquatic Ecosystem Restoration Program to cost-share Initiative work, including the preparation of the Alternatives Watershed Management Report, the Watershed Action Plan, and the conduct of stakeholder meetings.

COYOTE/BERRYESSA CREEK PROJECT, BERRYESSA CREEK PROJECT ELEMENT

Background.—The Berryessa Creek Watershed is located in northeast Santa Clara County, California, near the southern end of the San Francisco Bay. A major tributary of Coyote Creek, Berryessa Creek drains a large area in the City of Milpitas and a portion of San Jose. At 320 square miles, the Coyote Creek Watershed is the largest watershed in Santa Clara County, encompassing all of Milpitas and portions of San Jose and Morgan Hill.

On average, Berryessa Creek floods once every four years. The most recent flood in 1998 resulted in significant damage to homes and automobiles. The proposed project on Berryessa Creek, from Calaveras Boulevard to Old Piedmont Road, will protect portions of the Cities of San Jose and Milpitas. The flood plain is largely urbanized with a mix of residential and commercial development. Based on the Army Corps of Engineers 1993 draft General design Memorandum, a 1 percent or 100-year flood could potentially result in damages of $52 million with depths of up to three feet.

Study Synopsis.—In January 1981, the Santa Clara Valley Water District (District) applied for federal assistance for flood protection projects under Section 205 of the 1948 Flood Control Act. The Water Resources Development Act of 1990 authorized construction on the Berryessa Creek Flood Protection Project as part of a combined Coyote Creek /Berryessa Creek Project to protect portions of the Cities of Milpitas and San Jose.

The Coyote Creek element of the project was completed in 1996. The Berryessa Creek Project element proposed in the Corps' 1987 feasibility report consisted primarily of a trapezoidal concrete lining. The Corps and the District are preparing a General Reevaluation Report which involves reformulating a project which is more acceptable to the local community and more environmentally sensitive. Project features will include setback levees and floodwalls to preserve sensitive areas (minimizing the use of concrete), revegetation mitigation to protect the riparian environment, and sediment control structures to limit turbidity and protect water quality.

The project will also accommodate the City of Milpitas' adopted trail master plan. Estimated total costs of the General Reevaluation Report work are $3.5 million to be completed in fiscal year 2002.

Fiscal year 2000 Funding.—No federal appropriation received in fiscal year 2000.

Fiscal year 2001 Funding Recommendation.—Based on the continuing threat of significant flood damage from Berryessa Creek and the need to continue with the General Reevaluation Report, it is requested that the Congressional Committee support an appropriation add-on of $2.3 million for the Berryessa Creek Flood Protection Project element of the Coyote/Berryessa Creek Project.

COYOTE CREEK NEAR ROCK SPRINGS PROJECT

Background.—Coyote Creek flows through the cities of Milpitas and San Jose. The Rock Springs neighborhood is upstream of the recently completed, federally-supported flood protection works on Coyote Creek. The neighborhood suffered severe damages to approximately 25 apartment buildings in January 1997 when Coyote Creek flooded in the vicinity of the Rock Springs neighborhood. This event was estimated to be a 15-year event.

Status.—In February 1999, the Santa Clara Valley Water District (District) initiated discussions with U.S. Army Corps of Engineers (Corps) for a Section 205 study to reduce flood damage in Rock Springs neighborhood. A cost-sharing agreement for the Section 205 Small Projects Program $1.16 million three-year feasibility study was signed by the Corps and the District on January 4, 2000. Funding is a 50/50 cost share.

Project Timeline

—District requested federal assistance from Corps under Section 205—Feb. 1999
—Feasibility cost sharing agreement signed—Jan. 2000
—Public Workshop—Jun. 2000
—Draft Feasibility Report/Environmental Impact Statement (EIS)—Mar. 2002
—Final Detailed Project Report/EIS—July 2002

Fiscal year 2000 Funding.—No federal appropriation was requested in fiscal year 2000.

Fiscal year 2001 Funding Recommendation.—In order to continue the Coyote Creek near Rock Springs Project Feasibility Study, it is requested that the Congressional Committee support an earmark of $200,000 within the Section 205 Small Flood Control Projects Program for fiscal year 2001. This will provide the U.S. Army Corps of Engineers fiscal year 2001 share of the Feasibility Study costs.

PAJARO RIVER WATERSHED

Background.—Pajaro River flows into the Pacific Ocean at Monterey Bay, about 75 miles south of San Francisco. The drainage area encompasses 1,300 square miles in Santa Clara, San Benito, Monterey, and Santa Cruz counties. Potential flood damage reduction solutions will require cooperation between four counties and four water/flood management districts. There is critical habitat for endangered wildlife and fisheries throughout the basin. Six separate flood events have occurred on the Pajaro River in the past half century. Severe property damage in Monterey and Santa Cruz counties resulted from floods in 1995, 1997, and 1998. Recent flood events have resulted in litigation claims for damages approaching $50 million. $20 Million in U.S. Army Corps of Engineers (Corps) flood fight funds have been expended in recent years.

Status.—Two separate Corps activities are taking place in the watershed. The first activity is a Corps reconnaissance study authorized by a House Resolution in May 1996 to address the need for flood protection and water quality improvements, ecosystem restoration, and other related issues. The second activity is a General Revaluation Report initiated in response to claims by Santa Cruz and Monterey Counties that the 13 mile levee project constructed in 1949 through agricultural areas and the city of Watsonville is deficient. The reconnaissance study on the entire watershed has not been initiated due to priorities at the San Francisco District of the Corps. Watershed Stakeholders have pledged to work cooperatively to support the Corps' reconnaissance study, which will provide information to help reach an understanding and agreement about the background and facts of the watershed situation. Legislation passed by the State of California (Assembly Bill 807) titled "The Pajaro River Watershed Flood Prevention Authority Act" mandates that a Joint Powers Authority be formed by June 30, 2000. The purpose of the Joint Powers Authority is "to provide the leadership necessary to . . . ensure the human, economic, and environmental resources of the watershed are preserved, protected, and enhanced in terms of watershed management and flood protection. The Joint Powers Authority

will consist of representatives from the Counties of Monterey, San Benito, Santa Clara, and Santa Cruz, Zone 7 Flood Control District, Monterey County Water Resources Agency, San Benito County Water District, and the Santa Clara Valley Water District.

Funding Issues.—Although the Corps received fiscal year 2000 federal appropriation of $100,000 for initiation of Reconnaissance Study, the appropriation was held while Corps staff worked on the Pajaro River General Revaluation Report.

Fiscal year 2000 Funding.—$100,000 was authorized in fiscal year 2000 for the Pajaro Watershed Reconnaissance Study.

Fiscal year 2001 Funding Recommendation.—It is requested that the Congressional Committee support the Administration's fiscal year 2001 budget $600,000 for continuation of the General Revaluation Report. It is also requested that the committee support $50,000 for the Reconnaissance Study of the Pajaro River Watershed.

CENTRAL VALLEY PROJECT: OPERATIONS AND MAINTENANCE OF SAN LUIS UNIT JOINT USE FACILITIES

Background.—The San Luis Unit of the Central Valley Project is located by the city of Los Banos on the west side of the San Joaquin Valley. This unit originates from San Luis Reservoir and extends 102 miles south, spanning Fresno, Kings, and Merced counties. The San Luis Unit is an integral part of the Central Valley Project, delivering water and power supplies from the American, Shasta and Trinity rivers to users located in the service area.

Specific facilities of the San Luis Unit are owned, operated, and maintained jointly with the state of California. These Joint Use Facilities consist of O'Neill Dam and Forebay, San Luis Dam and Reservoir, San Luis Pumping-Generating Plant, Dos Amigos Pumping Plant, Los Banos and Little Panoche reservoirs, and the San Luis Canal. These facilities are essential to the State Water Project's ability to serve numerous agricultural, municipal, and industrial water users in the San Joaquin Valley and Southern California. Funding for the Joint Use Facilities are divided to 55 percent state and 45 percent federal, under provisions of Federal-State Contract No. 14–06–200–9755, December 31, 1961.

Within the Central Valley Project, the Joint Use Facilities of the San Luis Unit are an important link to the San Felipe Division, which serves as the largest source of water imported into the Santa Clara Valley Water District (District) and the San Benito County Water District. All of the Central Valley Project water delivered through the San Felipe Division must be pumped through O'Neill Dam and Forebay and San Luis Dam and Reservoir.

Project Synopsis.—Annual invoices from the state of California for the federal share of operation and maintenance costs average approximately $10 million. For several years, federal funding was inadequate to cover the pro-rated federal share of Joint Use Facility costs. The District intervened by using the contributed Funds Act to direct a $20 million advance payment of its Central Valley Project capital costs toward an operations and maintenance payment.

As a contractor of both the Central Valley Project and the State Water Project, the District hopes to expediently resolve the issue of unreimbursed operations and maintenance expenses. These expenses are carried by the state without interest, seriously impairing the cash flow and financial management of the State Water Project.

In fiscal year 1998, an agreement was reached between the U.S. Bureau of Reclamation and project contractors to provide direct funding for project conveyance and pumping facilities, reducing annual appropriations from approximately $10 million to $3.5 million.

Fiscal year 2000 Funding.—$4.525 million was authorized in fiscal year 2000 for operations and maintenance of the San Luis Joint Use Facilities.

Fiscal year 2001 Funding Recommendation.—Based upon past expenditures, it is requested that the Congressional Committee support $4.551 million in the Administration's fiscal year 2001 budget to continue operations and maintenance of the San Luis Unit Joint Use Facilities.

SAN JOSE AREA WATER RECLAMATION AND REUSE PROGRAM (SOUTH BAY WATER RECYCLING PROGRAM)

Background.—The San Jose Area Water Reclamation and Reuse Program, also known as the South Bay Water Recycling Program, will allow the city of San Jose and its tributary agencies of the San Jose /Santa Clara Water Pollution Control Plant to protect endangered species habitat, meet receiving water quality standards, supplement Santa Clara County water supplies, and comply with a mandate from

the U.S. Environmental Protection Agency and the California Water Resources Control Board to reduce wastewater discharges into San Francisco Bay.

The Santa Clara Valley Water District (District) is participating with the city of San Jose in the development of the reclamation and reuse program. Toward this end, the District is assisting the city of San Jose by providing financial support and technical assistance, and acting as a liaison for water retailers. The design, construction, construction administration, and inspection of the program's transmission pipeline and Milpitas 1A Pipeline was performed by the District under contract to the city of San Jose.

The city of San Jose is the program sponsor for Phase 1, consisting of almost 60 miles of transmission and distribution pipelines, pump stations, and reservoirs. Completed at a cost of $140 million, Phase 1 peak operation occurred in October 1999 with actual deliveries of 10 million gallons per day of recycled, nonpotable water.

Phase 2 planning is now underway. A study, to be completed in 2000 at a cost of approximately $3.5 million, will provide a master plan for the years 2010 and 2020. Phase 2's near-term objective is to increase deliveries by the year 2010 to 15,000 acre-feet per year.

In 1992, PL 102–575 authorized the Bureau of Reclamation to work with the city of San Jose and the District to plan, design, and build demonstration and permanent facilities for reclaiming and reusing water in the San Jose metropolitan service area. The city of San Jose reached an agreement with the Bureau of Reclamation to cover 25 percent of Phase 1's costs, or approximately $35 million; however, federal appropriations have not reached the authorized amount. To date, the program has received $14.6 million of the $35 million authorization.

Fiscal year 2000 Funding.—$3 million was authorized in fiscal year 2000 for project construction.

Fiscal year 2001 Funding Recommendation.—It is requested that the Congressional Committee support an appropriation add-on of $6.5 million, in addition to the $3.5 million included in the Administration's fiscal year 2001 budget, for a total of $10 million to fund the Phase 2 study and continue Phase 1 work.

SAN FRANCISCO AREA WATER RECLAMATION STUDY (BAY AREA REGIONAL WATER RECYCLING PROGRAM)

Background.—The Santa Clara Valley Water District (District) is participating with 16 Bay Area water and wastewater agencies, California Department of Water Resources, and U.S. Bureau of Reclamation to develop master plan for regional water recycling program. Study identifies regional markets and tools for maximizing Bay Area water recycling. 125,000 acre-feet per year of potable water potentially available for other uses by 2010, and 210,000 acre-feet per year potentially available by 2040.

Regional effort between water and wastewater agencies in five counties surrounding San Francisco Bay, including the cities of San Jose, San Francisco, and Oakland.

Status.—Step 1, completed in 1996, studied feasibility of transferring recycled water from San Francisco Bay Area to three nearby agricultural regions. Step 2, completed in September 1999, consisted of a regional water recycling master plan to maximize local recycling programs with an estimated cost of $3 million to $5 million. Funding for the master plan is available from the U.S. Bureau of Reclamation and local agencies, including in-kind services.

Fiscal year 2000 Funding.—No federal appropriation was authorized in fiscal year 2000.

Fiscal year 2001 Funding Recommendation.—It is requested that the Congressional Committee support an appropriation add-on of $1 million to the Administration's fiscal year 2001 budget to follow up on actions identified in the master plan, and to begin Environmental Impact Report/Environmental Impact Statement preparation for Project Set 1 as identified in the master plan (includes South Bay Water Recycling, South County Regional Wastewater Authority, and Sunnyvale).

PREPARED STATEMENT OF THE CITY OF OCEANSIDE, CALIFORNIA

Dear Chairman Domenici and Members of the Subcommittee: the City of Oceanside respectfully requests an appropriation of $502,325 for the City's Mission Basin Brackish Groundwater Desalting Research and Development Project. We would greatly appreciate your assistance in funding this important facility.

The existing Mission Basin Groundwater Desalting Facility has been an unqualified success. Since its completion in 1994, the facility has produced 2 million gallons

per day of superior-quality water from previously unusable brackish groundwater. This represents seven percent of the City's daily water supply needs—enough water to serve 4,000 Oceanside households. As our only water source that does not cross major earthquake fault lines, it is also a critically-needed emergency water supply.

The Mission Basin Brackish Groundwater Desalting Research and Development Project will be of genuine local, regional and state-wide benefit. It will expand the capacity of the facility to 6.2 million gallons per day, serving twenty-two percent of Oceanside residents. By reducing our dependence on imported water from the Colorado River and the Sacramento-San Joaquin River Delta, Oceanside will be part of the solution to California's water supply dilemma. Closer to home, the project will significantly increase the reliability of our water supply—an essential ingredient in the long-term health of our regional economy. When the facility expansion becomes a demonstrable success, the City will explore the use of reclaimed water injected into the groundwater basin to increase its capacity to 20 million gallons per day.

The cost of the expansion is estimated at $11,600,000. The authorization for this project included funding for twenty-five percent of 3 million gallons per day of the 4.3 million gallons per day expansion. It is estimated that the 3 million gallons per day expansion will cost $8.1 million. Oceanside has received $1.5 million to date for this project and is requesting the residual federal cost share under the provisions of the authorization. This remaining funding increment of $502,325 from the Bureau of Reclamation will enable the City to complete the project while reducing the financial impact on rate payers, and will advance the City towards our ultimate goal of producing 20 million gallons per day. The funding will create a ripple effect in Southern California and beyond by demonstrating the efficient use of groundwater desalting technology and stimulating other agencies to develop their own projects. Ultimately, appropriating funds to the City of Oceanside will provide some much-needed relief to the water supply crisis affecting the entire Southwestern United States. Construction is due to begin in mid-2000, and to be complete in 2002.

The City of Oceanside respectfully requests the residual federal cost share of $502,325 in the fiscal year 2001 Energy and Water Development Appropriation bill for this project. Thank you for your consideration of this request.

APPROPRIATION REQUEST—2001

The City of Oceanside is requesting an appropriation of $502,325 in the Fiscal Year 2001 budget for the Mission Basin Brackish Groundwater Desalting Research and Development Project. This amount is the remaining funding increment that has already been authorized.

Construction cost estimate is $11,600,000.

Benefits to the City of Oceanside and the Southern California Region include the following:

—Provides an emergency water supply for the City and the Camp Pendleton Marine Corps Base.

—Creates a highly reliable water supply, which is critical to the region's long-term economic health and its ability to attract and retain businesses.

—Provides benefits to California and the rest of the nation by reducing the region's demand for imported water from the Colorado River and the environmentally sensitive Sacramento-San Joaquin River Delta.

BACKGROUND

The City of Oceanside owns and operates a 2 million-gallon-per-day facility that recovers and desalts brackish groundwater from the San Luis Rey Mission Groundwater Basin. Oceanside proposes to expand this facility to 6.3 million gallons per day.

Water from the Mission Basin was previously considered unusable as a municipal water source due to its high salinity and mineral content.

The current desalting facility produces 2,200 acre-feet of potable water annually—enough water to meet the annual needs of 4,000 households.

Oceanside's local water supply development has received support from many agencies including the State of California, which loaned the City $5 million to build the initial small-scale demonstration project.

PROPOSED BRACKISH GROUNDWATER DESALTING AND DEVELOPMENT PROJECT

The project will increase production capacity of the existing desalting facility to 6.3 million gallons per day, or 6,400 acre-feet per year. This new water supply will be sufficient to meet 22 percent of the City's average annual water supply needs.

The project will benefit Oceanside and the larger San Diego region by creating a local, highly reliable water supply. Unlike imported water, this local water supply

does not cross major earthquake fault lines to reach consumers. A reliable water supply is critical to the region's long-term economic health, and its ability to attract and retain businesses.

The project will also serve as a model for other groundwater desalting projects in San Diego County and elsewhere in Southern California. The proposed expansion involves the use of Energy Saving Polyamide (ESPA) reverse osmosis membrane elements. The membranes offer significant savings in both investment and operation expenses that exceed other membrane elements currently on the market.

The Mission Basin Brackish Groundwater Desalting Research and Development Project will use reverse osmosis technology to produce potable water of higher quality than the City's imported water supply.

The reverse osmosis process involves pumping water at high pressure through semi-permeable membranes. Membrane pores are large enough to let water molecules through, but small enough to remove salts, metals, and other dissolved impurities.

Groundwater pumped from the basin is treated first with chemicals to optimize membrane operations, then filtered.

The pretreated water then is pumped through the reverse osmosis membranes to remove all but the smallest molecular compounds. Dissolved minerals and other impurities removed by the reverse osmosis membranes are discharged to the City's ocean outfall for disposal.

The water receives additional chemical treatment to meet drinking water standards before it is added to the City's potable water system.

PREPARED STATEMENT OF THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RESOLUTION NO. F2000–9 SUPPORTING FEDERAL APPROPRIATIONS FOR FLOOD CONTROL PROJECTS FOR FISCAL YEAR 2001

WHEREAS, the United States House of Representatives Committee on Appropriations, Subcommittee on Energy and Water Development, and the United States Senate Committee on Appropriations, Subcommittee on Energy and Water Development are holding hearings to consider appropriations for Flood Control and Reclamation Projects for fiscal year 2001 and have requested written testimony to be submitted to the committees prior to March 31, 2000; and

WHEREAS, the Riverside County Flood Control and Water Conservation District supports the completion of construction for the project to reduce flooding and bank destruction along the Santa Ana River at Norco Bluffs, California; the initiation of design efforts for a flood control project on Murrieta Creek; the completion of construction activities on the Gunnerson Pond Environmental Restoration project; the initiation of a flood control feasibility study for the San Jacinto River; the continuation of construction activities on the Santa Ana River Mainstem project; and the continuation of construction activities at Prado Dam; now, therefore,

BE IT RESOLVED by the Board of Supervisors of the Riverside County Flood Control and Water Conservation District in regular session assembled on March 7, 2000, that they support appropriations by Congress for fiscal year 2001 for the following projects:

U.S. Army Corps of Engineers

Santa Ana River at Norco Bluffs/Construction—General	$4,000,000
Murrieta Creek/Preconstruction Engineering & Design	1,000,000
Lake Elsinore—Gunnerson Pond/Section 1135 Environmental Restoration	1,400,000
San Jacinto River/Feasibility Study-Flood Control	225,000
Santa Ana River Mainstem/Construction—General	8,000,000
Prado Dam/Construction—General	10,000,000
San Jacinto & Santa Margarita River Watersheds (Riverside County) Special Area Management Plan (SAMP)	2,000,000

BE IT FURTHER RESOLVED that the General Manager-Chief Engineer is directed to distribute certified copies of this resolution to the Secretary of the Army, Members of the House of Representatives Committee on Appropriations and Subcommittee on Energy and Water Development, the Senate Committee on Appropriations and Subcommittee on Energy and Water Development, and the District's Congressional Delegation—Senators Dianne Feinstein and Barbara Boxer, Congressmen Ron Packard and Ken Calvert, and Congresswoman Mary Bono.

MURRIETA CREEK—PRECONSTRUCTION ENGINEERING & DESIGN

Murrieta Creek poses a severe flood threat to the cities of Murrieta and Temecula. Over $10 million in damages was experienced in the two cities as a result of Murrieta Creek flooding in 1993. The 1997 Energy and Water Appropriations Act dedicated $100,000 to conducting a Reconnaissance Study of watershed management in the Santa Margarita Watershed "including flood control, environmental restoration, stormwater retention, water conservation and supply, and related purposes". The study effort was initiated in April 1997 and completed the following December. The Reconnaissance Study identified a Federal interest in flood control on the Murrieta sub-basin, and recommended moving forward with a detailed feasibility study for a flood control project on Murrieta Creek. Efforts on the Feasibility Study began in April 1998, and are on schedule for completion in August 2000.

The District will be requesting a "Conditional Authorization" of the project through inclusion in the Water Resources Development Act Bill of 2000 (WRDA 2000). The project's authorization would be contingent upon the receipt of a favorable Chief's report by December 31, 2000. The District is confident of the Corps completing the Murrieta Creek Feasibility Study in August 2000 and issuing a favorable Chief's Report by the end of the calendar year. The Corps will then be in a position to initiate the detailed engineering design necessary to develop construction plans and specifications for a Murrieta Creek Flood Control Project. The District respectfully requests that the Committee support an fiscal year 2001 appropriation of $1,000,000 for the Corps to initiate an expedited Preconstruction Engineering and Design phase for a Murrieta Creek Flood Control Project.

SANTA ANA RIVER AT NORCO BLUFFS

The purpose of this project is to protect a susceptible 65 to 80-foot high bluff in the City of Norco from further retreat into a residential neighborhood. Severe bank sloughing results when flood flows within the Santa Ana River attack the toe of the bluffs. The floods of January and February 1969 undermined the toe of the bluff, causing severe bank sloughing. Although 50 to 60 feet of the bluff retreated to the south, and no improvements were lost, the threat to improvements from future river actions became apparent. The floods of 1978 and 1980 impinged further, causing another 30 to 40 feet of bluff retreat, and the loss of one single family residence.

The Water Resources Development Act of 1996, at Section 101b (4), provided for the authorization of the project based on a Chief's Report dated December 23, 1996 that recommends the project for construction. Design of the project was completed by the Corps in early 1999, and the first of two phases of construction contracts began in May 1999. The "Phase 1" contract is scheduled for completion in June 2000. Certain geotechnical/safety design considerations, coupled with extensive efforts required to adequately de-water the site for construction of the toe protection structure have resulted in an increased cost for the overall project. We, therefore, are now seeking the Committee's approval of supplemental funding in the amount of $4,000,000 in fiscal year 2001 for completion of construction of the Santa Ana River at Norco Bluffs Bank Stabilization Project. The Riverside County Flood Control and Water Conservation District is fully prepared to meet its cost-sharing obligation on this project.

GUNNERSON POND ENVIRONMENTAL RESTORATION PROJECT

Gunnerson Pond is a Section 1135 environmental restoration project that will restore approximately 60 acres of degraded riparian and woodland area adjacent to the Lake Elsinore Outlet Channel, a Section 205 project in the City of Lake Elsinore, completed in 1994. The project would enable both floodwater from Lake Elsinore and discharge from a nearby wastewater treatment plant to flow into Gunnerson Pond, thereby creating a permanent wetland. Such a wetland would serve to enhance and develop waterfowl habitat, endangered species habitat, emergent wetlands vegetation, and riparian vegetation.

The Reconnaissance phase of the project was completed with the approval, in July of 1996, of the Project Restoration Plan at the Washington level of the Corps. In fiscal year 1998 the project received a Federal appropriation in the amount of $2.1 million to fully fund the Feasibility Study, and to initiate engineering design for the project. The feasibility phase (Project Modification Report) of the project was completed in April of 1998. In fiscal year 1999 we sought a $1,500,000 Federal appropriation for Gunnerson Pond from available Section 1135 funds to provide the Federal funding necessary to complete final plans and specifications, to provide for an early Federal contribution toward land acquisition, and to partially fund construction. The design of the project is essentially complete. The Corps anticipates adver-

tising for construction bids in May 2000, with a construction start in September 2000. The District respectfully requests the Committee's support of an fiscal year 2001 appropriation of $1,400,000 to fully fund the Federal share (75 percent) of the overall project.

SAN JACINTO & SANTA MARGARITA RIVER WATERSHEDS SPECIAL AREA MANAGEMENT PLAN

The County of Riverside recognizes the interdependence between the region's future transportation, habitat, open space, and land-use/housing needs. In 1999, work was initiated on Riverside County's Integrated Planning program (RCIP) to determine how best to balance these factors. The plan will create regional conservation and development plans that protect entire communities of native plants and animals while streamlining the process for compatible economic development in other areas. The major elements of the plan include water resource identification, multi-species planning, land use, and transportation.

Water resources are the critical element of any regional planning effort. The County of Riverside has therefore requested that the Corps initiate work on what are termed Special Area Management Plans (SAMP) for both the San Jacinto and Santa Margarita watersheds to qualitatively identify existing and future water resources requirements in each area. The Corps effort will include facilitating meetings between all potential watershed partners, and the integration of the joint study effort with the planning efforts of the balance of the RCIP project. We, therefore, respectfully request that the Committee support a combined $2 million appropriation of Federal funding for fiscal year 2001 for the Corps to initiate work on Special Area Management Plans for the San Jacinto & Santa Margarita River Watersheds.

SAN JACINTO RIVER

The 730 square mile San Jacinto River watershed drains into Lake Elsinore in Western Riverside County. The San Jacinto River originates in the San Jacinto Mountains and passes through the cities of San Jacinto, Perris, Canyon Lake and Lake Elsinore. The only major flood control structures on the river are levees in the city of San Jacinto built by the Corps of Engineers in the early 1960's. In the 30-mile reach of the river between Lake Elsinore and the city of San Jacinto, only minor channelization exists as the river is characterized by expansive overflow areas including the Mystic Lake area.

Flooding from the river has caused major damage to agricultural areas and rendered Interstate 215 and several local arterial transportation routes impassable. The river is, however, an important resource that provides water supply, wildlife habitat, drainage and recreation values to the region. The fiscal year 2000 Energy and Water Appropriations Act dedicated $100,000 to conducting a Reconnaissance Study of watershed management in the San Jacinto River Watershed "including flood control, environmental restoration, stormwater retention, water conservation and supply, and related purposes". The study effort will be initiated in March 2000 and completed the following September. We anticipate that the Reconnaissance Study will identify a Federal interest in flood control on the San Jacinto River, and recommend moving forward with a detailed Feasibility Study for a flood control project. Other studies may also be recommended. The Administration's fiscal year 2001 budget proposes an appropriation of $225,000 to move into a Feasibility Study for the San Jacinto River. The District therefore respectfully requests the Committee's support of a $225,000 appropriation.

SANTA ANA RIVER—MAINSTEM

The Water Resources Development Act of 1986 (Public Law 99–662) authorized the Santa Ana River—All River project which includes improvements and various mitigation features as set forth in the Chief of Engineers' Report to the Secretary of the Army. The Boards of Supervisors of Orange, Riverside, and San Bernardino Counties continue to support this critical project as stated in past resolutions to Congress.

The Local Cooperation Agreement (LCA) was signed in December 1989 by the three local sponsors and the Army. The first of five construction contracts started on the Seven Oaks Dam feature in the Spring of 1990 and the dam was officially completed on November 15, 1999. A dedication ceremony was held on January 7, 2000. Significant construction has been completed on the lower Santa Ana River Channel and on the San Timoteo Creek Channel. Construction activities on Oak Street Drain and the Mill Creek Levee have been completed.

For fiscal year 2001, an appropriation of $6 million is requested to complete funding necessary to construct "Reach 9" (immediately downstream of Prado Dam), a

section of streambed to receive some floodwall and slope revetment work to protect existing development along its southerly bank. The removal of accumulated sediment within an already completed section of the Santa Ana River Channel near its outlet to the Pacific Ocean, will necessitate an fiscal year 2001 appropriation of $2 million. This dredging work is necessary prior to project turnover to the Local Sponsors for operation and maintenance.

The Prado Dam feature of the Santa Ana River Mainstem project continues to edge closer to a construction start. Engineering design for the dam embankment and outlet works is on schedule to be completed in June 2000. Design work is underway on several interior dikes included in the project.

Additional design contracts are ready to be let for the balance of engineering work necessary prior to construction. An fiscal year 2001 appropriation of $10 million would allow the Corps to complete all of its design efforts on the Prado Dam project, and to initiate construction on Prado Dam's outlet works and embankment. Additionally, $2 million of these funds would be earmarked for the completion of the State Highway 71 Dike construction project, which is scheduled to commence late this fiscal year.

We, therefore, respectfully request that the Committee support an overall $18 million appropriation of Federal funding for fiscal year 2001 for the Santa Ana River Mainstem project, which is the amount included in the Administration's budget.

PREPARED STATEMENT OF THE COUNTY OF TULARE

Mr. Chairman and Members of the Committee: the County of Tulare request your consideration of an appropriation of $250,000 in the fiscal year 2001 Federal budget for the United States Army Corps of Engineers for the commencement of a feasibility study for the Frazier & Strathmore Creeks flood control project.

The Corps of Engineers have started the reconnaissance level study of Frazier & Strathmore Creeks as your committee provided the funding therefore in the fiscal year 2000 budget for which we are most grateful.

Frazier & Strathmore Creeks are uncontrolled streams that continue to devastate agricultural lands in Tulare County, flood the community of Strathmore and disrupt commerce on a major highway arterial, State Route 65.

The Corps of Engineers typically expend $2-million for a feasibility study and require two years for preparation. Under the 50/50 cost sharing agreement and the Corps capability in fiscal year 2001, the Federal government would need to budget $250,000 in fiscal year 2001 with the remainder in fiscal year 2002 for the Frazier & Strathmore Creeks feasibility study.

The local sponsors urge the subcommittee's appropriation of $250,000 in fiscal year 2001 for the Frazier & Strathmore Creeks feasibility study by the Corps.

PREPARED STATEMENT OF THE CAWELO WATER DISTRICT

Mr. Chairman and Members of the Committee: the Cawelo Water District, North Kern Water Storage District and Semitropic Water Storage District request your consideration of an appropriation of $500,000 in the fiscal year 2001 Federal budget for the United States Army Corps of Engineers for the continuation of a feasibility study for the Poso Creek flood control project.

The Corps of Engineers completed a reconnaissance study of Poso Creek in fiscal year 1999, and found that there was a Federal interest in proceeding to a feasibility level study. Local sponsors have been identified for the 50/50 cost sharing of the feasibility study.

Poso Creek, is an uncontrolled stream that continues to devastate agricultural lands in Kern County, flood the community of McFarland, and ravage the Kern National Wildlife Refuge. Major highway arterials, State Route 99 and SR 43, have been closed due to Poso Creek floodwaters, resulting in the disruption for several days of commerce by time delaying detours.

The Corps of Engineers estimate the feasibility study will cost in excess of $2-million and require two years for preparation. The fiscal year 2000 federal budget included an appropriation of $250,000 for the Poso Creek flood control feasibility study. For an orderly continuation of the flood control investigation $500,000 is needed in fiscal year 2001 with the remainder in fiscal year 2002.

The local sponsors urge the subcommittee's appropriation of $500,000 in fiscal year 2001 for continuation of the Poso Creek feasibility study by the Corps.

PREPARED STATEMENT OF THE COUNTY OF SAN BERNARDINO BOARD OF SUPERVISORS

SANTA ANA RIVER MAINSTEM PROJECT

Project Description

The Santa Ana River Mainstem Project includes seven interdependent features: Mill Creek Levee, Oak Street Drain, San Timoteo Creek, Lower Santa Ana River, Seven Oaks Dam, Prado Dam and Santiago Creek. Seven Oaks Dam, Mill Creek Levee, Oak Street Drain, San Timoteo Creek Reaches 1, 2 and 3A and the Lower Santa Ana River Reaches 1, 2, 3, 4, 5, 6, 7 and 10 are complete. Completion of all of the features will provide (a) the necessary flood protection within Orange, Riverside and San Bernardino Counties; (b) enhancement and preservation of marshlands and wetlands for endangered waterfowl, fish and wildlife species; (c) recreation amenities; and (d) floodplain management of the 30 miles of Santa Ana River between Seven Oaks Dam and Prado Dam.

San Bernardino County Features Status

Seven Oaks Dam.—The main embankment contract was completed in November 1999. Some minor modifications are underway and scheduled for completion in August 2000.

San Timoteo Creek.—Reach 1 construction was completed in September 1996. Construction on Reaches 2 & 3A was completed in June 1998. Overall, construction is approximately 60 percent complete. A proposed alternative is currently undergoing NEPA/CEQA review to complete the remainder of the project.

Funding Required

The required funding amount matches the President's proposed in the amount of $18,000,000. A total of $10,000,000 is requested for Design and Construction start for Prado Dam and $8,000,000 is requested to continue construction of the Mainstem Project on schedule, in fiscal year 2000/2001. Federal funding in the amount of $18,000,000 would be as follows:

Lower Santa Ana River:

—*Engineering Design, Construction, Landscaping, and Sediment Removal*.—$8,000,000.

Prado Dam:

—*Design and Construction start*.—$10,000,000.

Project Authorized.—Public Law 94–587, Section 109, Approved October 22, 1976, Public Law 99–662, Water Resources Development Act of 1986.

Total Project Cost.—$1.4 billion—Includes $473 million local share.

President's Budget.—$18,000,000.

Requested Action.—Approval of $18,000,000 for Santa Ana River Mainstem.

SAN TIMOTEO CREEK

Project Description

The San Timoteo Creek is a major tributary to the Santa Ana River in the east San Bernardino Valley. A large watershed of approximately 126 square miles drains into the Creek which flows through the Cities of Redlands, Loma Linda and San Bernardino before discharging into the Santa Ana River. The existing Creek, in all three Cities, was an earthen bottom and partially improved embankments reinforced with rail and wire revetments.

Major storm flows along the Creek in 1938, 1961, 1965, 1969 and 1978 caused considerable damage to the Creek itself as well as overtopping the banks and causing loss of life and severe property damage.

The Energy and Water Development Appropriations Act of 1988 authorized improvement of San Timoteo Creek as part of the Santa Ana River Mainstem Project. The improvements include the construction of approximately 5.5 miles of concrete-lined channel from the Santa Ana River upstream through the Cities of San Bernardino, Loma Linda and Redlands plus the construction of debris retention facilities at the upstream end of the project in the form of in-channel sediment storage basins.

Project Status

Overall project construction is 60 percent complete. An alternative design has been developed for Reach 3B, the upstream 40 percent of the project, that will include the construction of approximately 0.2 mile of improved channel and 18 in-channel sedimentation basins. Plans for the final phase will be developed during the

remaining 1999/2000 fiscal year with completion of construction anticipated in October 2002.

Completed Phases:			
Reach 1	0.7 mile of Channel	COMPLETED	September 1996
	Waterman Avenue Bridge	COMPLETED	September 1996
Reach 2	1.9 miles of Channel	COMPLETED	October 1997
	Redlands Boulevard Bridge	COMPLETED	March 1998
Reach 3A	0.8 mile of Channel	COMPLETED	June 1998
Remaining Construction and Schedule:			
Reach 3B:	0.2 mile of channel and 18 sedimentation basins along 2.2 miles of channel.		
	Plans and Specifications		April 1999—July 2000
	Right-of-Way Acquisition		May 2000—August 2000
	Construction Start		September 2000
	Construction Completion		October 2002

Estimated Project Cost

The total estimated project cost is approximately $67,000,000 with the federal participating cost at 75 percent or $50,250,000 and the local participating cost at 25 percent or $16,750,000. The cost of the remainder of the project is estimated to be $35,000,000, with the Federal share at $26,250,000 and the local share at $8,750,000.

Requested Action.—Approval of continued funding for the San Timoteo Creek Project.

UPPER SANTA ANA RIVER WATERSHED RECONNAISSANCE STUDY

The area will focus on the watershed of the Santa Ana River and tributaries located above Prado Dam, primarily in San Bernardino County. The study is to describe all watershed characteristics and uses, to define problem areas under present and future conditions and assist the County and local interests in developing a long-term master plan for watershed management in the interest of improving specific water resource uses including environmental preservation and restoration, urbanization water supply and conservation and water-related recreation activities.

The San Bernardino County Flood Control District supports the reconnaissance study for management of the Upper Santa Ana River Watershed.

Requested Action.—Approval of $100,000 for Upper Santa Ana River Watershed.

ORANGE COUNTY, SANTA ANA RIVER BASIN FEASIBILITY STUDY—(CHINO AGRICULTURE PRESERVE AREA)

The Chino Dairies are located in a 30 square-mile area immediately north of Prado Dam reservoir, in the unincorporated portion of San Bernardino County. The study provides information on the following elements: operations of Chino Dairies, water conservation in Chino Groundwater Basin, flood control facilities to relieve runoff from upstream development in the City of Ontario, water quality concerns of Orange County residents and the regulatory enforcement of the Chino Dairies. The Chino Dairies provide 25 percent of all the milk consumed in California and it is a one billion dollar industry.

The San Bernardino County Flood Control District supports the feasibility study to help with flood control facilities, water conservation and keep the dairies maintain their viability.

Requested Action.—Approval of $100,000 for Orange County, Santa Ana River Basin.

MOJAVE RIVER FORKS DAM FEASIBILITY STUDY

The Mojave River flows north out of the San Bernardino Mountains into the desert communities of Victorville and Barstow. The Mojave River Forks Dam (Dam) is an ungated facility designed and constructed by the U.S. Army Corps of Engineers to alleviate flooding. Since that time, environmental regulations such as the Endangered Species and Clean Water Acts and the recent water rights adjudication have changed the river's usage. The study will consider factors such as the current water rights adjudication while facilitating balance among the River's competing usage and diverse interest. Alternatives include modification of the Dam's operation

and outlet works, construction of a release tower and operable gates and construction of one or more off-line detention basins.

The San Bernardino County Flood Control District supports this feasibility phase study to evaluate viable water conservation alternatives while optimizing the balance between environmental, flood control and water supply needs.

Requested Action.—Approval of $300,000 for Mojave River Forks Dam.

SAN BERNARDINO COUNTY FEASIBILITY STUDY

Wilson, Potato and Wildwood Creeks originate in the San Bernardino Mountains and flow in a south and southwesterly direction through the City of Yucaipa, San Bernardino County. The study would investigate methods to control erosion and reduce the impacts to the downstream open space areas, residences and commercial areas within the watershed. The runoff creates a large volume of debris and sediment within the City of Yucaipa. Flooding along these Creeks is threatening to damage residential and commercial development and infrastructure facilities.

The San Bernardino County Flood Control District is requesting this feasibility study to evaluate the systems and determine appropriate methods of protection through new facilities and management of the existing floodplain.

Requested Action.—Approval of $100,000 for San Bernardino County.

MISSION ZANJA CREEK FEASIBILITY STUDY

The area is located in the City of Redlands, San Bernardino County. The Mission Zanja Creek (Creek) project begins at about 2,000 feet east of Interstate 10 to the Reservoir Canyon Drain, just west of 8th Street. Floods of 1965, 1976 and 1980 caused about $4.3 million (1988 price level) in damages. Frequent flooding along the Creek is caused by inadequate capacity of the existing inlet to the covered channel near 9th Street. The U.S. Army Corps of Engineers study indicates that expansion of inlet on the Creek will result in a small increase in the level of protection, but will increase flooding the areas surrounding Reservoir Canyon Drain. Even though, this project will cause flooding at the downstream area, but it will be much smaller.

The San Bernardino County Flood Control District supports the feasibility study to improve the inlet of Mission Zanja Creek to reduce flooding area.

Requested Action.—Support of Mission Zanja Creek, fiscal year 2000/2001.

SAN SEVAINE CREEK WATER PROJECT

Project Description

The San Sevaine Creek Water Project includes ten recharge facilities, two miles of levees; construction of seven miles of drainage ways to convey runoff to the recharge facilities; six miles of linear parkways; and the preservation of 137 acres of sensitive wildlife habitat. This project will provide water conservation and flood protection to a drainage area of approximately 51 square miles within the cities of Fontana, Rancho Cucamonga and Ontario as well as San Bernardino and Riverside Counties. There will be an average of approximately 25,000 acre-feet per year of groundwater recharge from the San Sevaine and Etiwanda Creeks' tributaries in the project area.

Project Status

The Loan Application was signed by the Bureau of Reclamation Commissioner Eluid Martinez on April 11, 1996, approved by the Secretary of Interior Bruce Babbitt on May 9, 1996. As of July 15, 1996, the San Sevaine Creek Water Project completed 60-day congressional approval process. On December 17, 1996, the project Repayment Agreement was approved by the Board of Supervisors of San Bernardino County and approved on January 8, 1997 by Robert Johnson, Regional Director of the Bureau of Reclamation. The Bureau has indicated an eight-year construction schedule with project completion by the Year 2006. The Bureau is attempting to complete the funding of this project by the Year 2002.

Although considerable levee, channel and interim basin work has already been completed at various locations of this major water project, continued federal assistance from this Small Reclamation Project Act loan and grant are required to complete the project's construction. Without these funds it will be decades before local interests can accrue sufficient funds to construct this vital water project. To date, the Bureau of Reclamation has provided approximately $16.1 million towards construction of the project.

The California Water Commission has consistently, since the late 1980s, supported the construction of this project.

Federal Authority	Public Law 84–984, as amended in 1956
Bureau of Reclamation—Grant Contribution	Approximately $27.4 million.
Bureau of Reclamation—Loan Contribution	Approximately $19.2 million.
TOTAL B of R—Project—(Not Additive)	Approximately $52.9 million.
Total Local Contribution	Approximately $33.7 million.
1997/1998 fiscal year Federal Budget—(New Project Start)	$1.333 million.
1998/1099 fiscal year Federal Budget	$1.177 million.
1999/2000 fiscal year Federal Budget—(Approved)	$10.18 million—($3.94 million received to date).
President's Budget fiscal year—2000/2001	$11.21 million.

The District and County have coordinated with the Bureau of Reclamation and the National Water Resources Agency in a cooperative effort to obtain the continued funding for this project. The District and County appreciate the continuing support provided by the Bureau of Reclamation towards this project.

Requested Action.—Support President's proposed fiscal year 2000/2001 budget in the amount of $11.21 million.

PREPARED STATEMENT OF THE MERCED IRRIGATION DISTRICT

Mr. Chairman and Members of the Committee: My name is Ross Rogers, General Manager of the Merced Irrigation District. I am respectfully submitting this statement on behalf of the County of Merced, the City of Merced, and the Merced Irrigation District, which jointly form an informal coalition commonly known as the Merced County Streams Group for the purpose of performing maintenance functions along portions of the Merced County Streams Project. The County of Merced, together with the State of California, is the sponsor of the Merced County Streams Project. The El Nido Irrigation District and the Le Grand Athlone Water District are also concerned in this matter.

Federal authorization for the project construction was granted as part of the Supplemental Appropriations Act of 1985. Authorized facilities include constructing dry dams on Canal (Castle Dam) and Black Rascal Creeks (Haystack Mountain Dam), enlargement of the existing Bear Creek Dam, and modifications of levees and channels along more than 25 miles of Fahrens, Black Rascal, Cottonwood, and Bear Creeks. The completed project will provide flood protection worth more than $10,000,000 per year to 263,000 acres of urban and agricultural lands. Total project cost is currently estimated to be $133,000,000 of which $40,000,000 or roughly 31 percent will be paid during construction by the local beneficiaries.

When completed, more than 240,000 residents occupying 55,000 housing units within the greater metropolitan Merced area will live with assurance of 125-year flood protection, while the lower rural area will receive 25-year protection.

The first component of the project, Castle Dam, was completed in 1992. This component was constructed under budget, ahead of schedule, and without a lost-time accident. Without Castle Dam during the intense storms of January, February, March 1995, January 1997 and January, February, March, 1998, the city of Merced would have been partially inundated.

As a result of a request by the County of Merced, the Corps of Engineers has reevaluated project components and will extend the boundaries of the levee and channel portion of the project to better match growth that has taken place in the city of Merced. This willingness to remain flexible throughout the lengthy planning and design process is also a credit to the Corps and its staff.

The Merced County Streams Project is a modification and expansion of an earlier flood project constructed between 1948 and 1957. It has undergone considerable review and modification since first authorized as part of the Flood Control Act of 1970. Approximately $18,500,000 has been spent to date on the Merced County Streams Project. This has been matched with local contributions of approximately $3,000,000. As partners in the construction of this project, the local agency sponsors have worked closely with the Corps to establish an economic balance between costs and benefits. As a result of this combined effort, nonessential project components were first scaled back and eventually eliminated. This scaling to fit the economic reality resulted in substantial federal and local savings.

On January 15, February 3 and March 25, 1998, due to El Niño-driven storms, Bear Creek overtopped its banks in several locations within and downstream of the city of Merced, flooding 33 homes, county, city and Merced Irrigation District infra-

structure, and thousands of acres of prime agricultural land, with total damages in the millions of dollars. The U. S. Army Corps of Engineers, with input from the National Weather Service, estimates that the January 15th and March 25th events were both 1-in-100 year events, unprecedented for the area. The greatest storm intensity in both storms centered in northeastern Merced County in and around the watershed of Black Rascal Creek, tributary to Bear Creek, upstream of the Merced County Streams Project's proposed Haystack Mountain Dam site. According to Corps of Engineer's rating tables for the Black Rascal Creek Bypass gaging station, January flows reached 4,300 cubic feet per second (cfs) in a channel with a rated maximum capacity of 3,000 cfs, 143 percent of channel capacity. March flows exceeded 4,700 cfs, or 157 percent of channel capacity. Had the Merced County Streams Project's Haystack Mountain Dam been in place, no flooding would have occurred along Bear Creek during the January, February or March events.

Due primarily to the New Years, 1997 devastating California flood, the U. S. Congress and the California legislature authorized a four year study, identified as: "Sacramento and San Joaquin River Basins Comprehensive Study." The study was authorized under the Flood Control Act of 1962 (Sacramento River) and the 1964 Congressional Resolution (San Joaquin River). According to a brochure distributed by The Reclamation Board of the State of California and the U. S. Army Corps of Engineers, Sacramento District, the study:

> ". . . will initially identify problems, opportunities, planning objectives, constraints, and measures to address flooding and ecosystem problems in the study area. It will ultimately develop a strategy for flood damage reduction and integrated ecosystem restoration along with identification of projects for early implementation. Solutions will include consideration of both structural and non-structural measures . . ."

According to the study timeline, in April, 1999, an interim report was presented to Congress. In 2001, a Draft Strategy for Flood Management and Related Environmental Restoration will be completed. By the Spring of 2002, the final Strategy and EIS/EIR, including an implementation plan will be completed.

There is great concern on the part of the City of Merced, County of Merced and the Merced Irrigation District officials that the Merced County Streams Project will be "swallowed up" by the Comprehensive Study, becoming one of many new flood control projects that have not yet received Congressional authorization. The Merced County Streams Project has been authorized by Congress. This important and urgent Project must not lose its priority for Congressional funding or be further delayed while the Comprehensive Study is undertaken.

The project has the support of state and local authorities and funding of the non-federal portion has been addressed.

We request the Committee's support for the inclusion of $500,000 in the fiscal year 2001 budget, as recommended by the California Water Commission and the Corps of Engineers, for the orderly progress of the Merced County Streams Project, which is so vital to the community, state, and the nation.

PREPARED STATEMENT OF THE TULE RIVER ASSOCIATION

Mr. Chairman and Members of the Committee: The Tule River Association, an association of all the water rights holders at and below Success Reservoir, request your consideration of an appropriation of $425,000 in the fiscal year 2001 Federal budget for the United States Army Corps of Engineers for completion of the preconstruction engineering and design (PED) for the Tule River Success Reservoir Enlargement Project. Initial funding for PED was authorized by the congress in fiscal year 2000.

The Success Reservoir Enlargement Project would increase the reservoir storage capacity 28,000 a.f. by raising the spillway 10 feet and by widening the existing spillway 165 feet. The additional flood control storage space improves the protection for the City of Porterville and downstream highly developed agricultural lands from a return period flood event occurring once in 47 years to once in 100 years.

The Success Reservoir Enlargement Project was conditionally authorized by the Water Resources Development Act of 1999. The authorization was subject to the conditions recommended in a favorable final report by the Chief of the Army Corps of Engineers which occurred December 23, 1999, copy attached for reference.

The design of the Success Reservoir Enlargement Project will commence upon the execution of a cost sharing agreement between the U. S. Army Corps of Engineers, the State of California and the Tule River Association. Construction of the Success

Reservoir Enlargement Project is scheduled to commence in fiscal year 2002 with completion in fiscal year 2003 subject to appropriations by the Congress.

The Tule River Association urges the continued support of your committee with an appropriation of $425,000 in fiscal year 2001 for completion of PED by the Corps for the Success Reservoir Enlargement Project.

Thank you for your consideration.

PREPARED STATEMENT OF BUTTE COUNTY, CALIFORNIA

NUISANCE FLOODING AT THE 3B'S FLOOD RELIEF STRUCTURE

The U.S. Army Corps of Engineers has determined the above referenced nuisance (low flow) flooding problem may qualify for a Reconnaissance Investigation Report under Section 205. This nuisance flooding severely impacts agriculture, infrastructure, interstate commerce and economics within the Butte Basin, consisting of three Counties in California. The economic and interstate commerce impacts adversely affect areas throughout the United States.

The primary goal of the project is to provide a permanent overflow facility that will allow flood flows from the Sacramento River to be diverted to area where the least amount of damages will occur while providing protection to those same areas to prevent flows which are below flood stage from entering the Butte Basin.

At this time we are asking The Honorable Members of the United States Senate to support Federal Funding for the U. S. Army Corps of Engineers to proceed with a Reconnaissance Investigation for this critical flood control project in fiscal year 2000/2001.

CHEROKEE CANAL AQUATIC ECOSYSTEM RESTORATION PROJECT

The U.S. Army Corps of Engineers has completed a Reconnaissance Investigation for aquatic ecosystem restoration on a flood control project previously constructed under their direction.

The primary goal of the restoration is to create an aquatic ecosystem restoration project that can be operated and maintained, within the existing flood control project, in compliance with all environmental regulations. Besides aquatic ecosystem restoration, reduced sediment removal in the existing flood control project may be associated with the Section 1135 project. Reductions of sediment load in Cherokee Canal could substantially improve flood control operations and reduce maintenance costs.

At this time we are asking the Honorable Members of the United States Senate to support Federal Funding for the U. S. Army Corps of Engineers to proceed with an Ecosystem Restoration Report, under Section 1135 for this critical project in fiscal year 2000/2001.

ROCK CREEK-KEEFER SLOUGH FLOOD CONTROL PROJECT

Butte County in cooperation with the California Reclamation Board and U.S. Army Corps of Engineers (Corps) is currently in the Feasibility Study Phase of the project review with several important milestones to occur in the near future. In March the Corps is expected to provide 5 project construction alternatives for review and discussion by the Working Group. When the components of the alternatives have been agreed upon they will be subject to an Environmental Review through the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) processes.

In May we expect development of the NED Plan (National Economic Development Plan) to start. M–CACES (Micro-Computer Aided Cost Estimate System) of this plan is planned for October with the establishment of projected project construction cost by November 1, 2000.

Our goal is to have the project properly reviewed, designed and constructed in the shortest possible time. This does not mean we want to cut any corners or bend any rules. It means we do not want to miss any deadlines or waste any time waiting for something to start which should have already been completed, including project budgeting.

At this time we are asking The Honorable Members of the United States Senate to support Federal Funding for the U.S. Army Corps of Engineers to proceed with the Preliminary Engineering Design (PED), in fiscal year 2000/2001 for construction of this critical Flood Control Project in their fiscal year 2000 recommended flood control projects.

PREPARED STATEMENT OF THE CITY OF STOCKTON

Mr. Chairman and Members of the Committee: The City of Stockton supports the following Corps of Engineers and Bureau of Reclamation water, flood control and fishery projects:

Water Commission Recommendation

[Fiscal year 2001]

Project	*Recommendation*
U.S. ARMY CORPS OF ENGINEERS:	
Sacramento and San Joaquin Rivers Comprehensive Study	$1,500,000
Sacramento San Joaquin Delta Investigation	300,000
San Joaquin River Basin, Corral Hollow Creek	65,000
San Joaquin River Basin-Stockton Metropolitan Area (Section 211)	180,000
San Joaquin River Basin-Farmington Groundwater Recharge & Wetland Restoration Project	150,000
Port of Stockton and San Joaquin River Channel	(1)
San Joaquin River Basin-Consumnes and Mokelumne Rivers ...	150,000
San Joaquin River Basin-Farmington Groundwater Recharge & Wetland Restoration Project (preconstruction and engineering studies)	1,050,000
Water Resources Dev. Act, 1986, Improvement of Environment Program, Mormon Channel	300,000
BUREAU OF RECLAMATION:	
South Delta Barriers	92,000
Water Acquisition-VAMP	1,500,000
The following project is recommended with conditional support:	
BUREAU OF RECLAMATION: Bay-Delta Ecosystem Restoration (CALFED)	60,000,000

[1] New Corps project.

U.S. CORPS OF ENGINEERS

Sacramento & San Joaquin Rivers Comprehensive Study—$1,500,000

The San Joaquin River Comprehensive Study is an ongoing $26.5 million study of the water resources needs of the San Joaquin and Sacramento Rivers. Flood control and environmental needs will receive equal consideration. We expect setback levees and reoperation of existing reservoirs will receive a careful review in this Study. A status report to Congress was released this last year, outlining $16 to $20 million in studies to be performed. The President approved $3.58 million for fiscal year 2000 and $1.5 million for fiscal year 2001. At this time, the exact allocation between each of the river basins is unclear, although 50–50 seems likely. The State is the cost-sharing partner in these studies.

Sacramento-San Joaquin Delta Investigation—$300,000

This is a special study and a regional planning report which addresses multiple resource needs, including flood control, recreation, environmental restoration, navigation, water supply, etc. The California Department of Water Resources is the cost-sharing partner with the CALFED process. To date, field tests of levee-strengthening methods have been pursued and the study provides input to the CALFED process. The President's budget for this investigation for fiscal year 2001 is $300,000.

San Joaquin River Basin, Corral Hollow Creek—$65,000

This is a new project investigating flood control improvements to protect adjacent lands in the southern portion of the County and the nearby Deuel Vocational Institute correctional facility. The President's budget for this investigation for fiscal year 2001 is $65,000.

San Joaquin River Basin-Stockton Metropolitan Area, Section 211—$180,000

Before federal dollars can be appropriated to reimburse the local agency (up to 75 percent reimbursement), a Section 211 Report must be completed and approved by the Secretary of the Army. The 211 Report was completed at the Sacramento office of the United States Army Corps of Engineers (Corps) in late 1999 justifying a reimbursement of as much as $38 million. This same report was forwarded to the Corps' office in Washington, D.C. for final review and approval. The President's 2001 budget of $180,000 is adequate to compete the required 211 report and begin

the feasibility report addressing rural flood control Improvements. However, the Corps and the Federal Committee on Appropriations should allocate $10 million for fiscal year 2001 as a start for new construction in anticipation that the reimbursement will be approved during the current fiscal year 2000. The California Water Commission will be requested to recommend an increase in funding in the amount of $10 million as a start for new construction.

San Joaquin River Basin-Farmington Groundwater Recharge & Wetland Restoration Project—$150,000

The study costs for this investigation will determine if a federal interest may exist for utilizing Farmington Dam for multiple purposes inclusive of flood control, groundwater recharge, and environmental enhancement. The President has included $100,000 in his fiscal year 2001 budget for completing this feasibility study; all federal funds must be matched by local funds. The sponsor for this study is Stockton East Water District , the City of Stockton and other east side water purveyors of San Joaquin County. An additional $150,000 has been budgeted for fiscal year 2001 to start the preconstruction and engineering work.

San Joaquin Rivers—Cosumnes and Mokelumne Rivers—$150,000

A reconnaissance study of ecological restoration and non-structural flood control improvements is being performed on the Mokelumne and Cosumnes Rivers. The current fiscal year 2000 funding is $50,000, and the President's fiscal year 2001 budget is $150,000. Separate studies and reports are continuing for the Cosumnes River (between the Delta and Michigan Bar) and the Mokelumne River (between the Delta and Camanche Reservoir). The East Bay Municipal Utility District and Woodbridge Irrigation District are the local sponsors working with the United States Army Corps of Engineers on the Mokelumne River investigations.

Port of Stockton and San Joaquin River Channel—New Corps Project

This is a new feasibility study which is being performed for dredging and deepening the San Joaquin River channel, through the Delta to the Port of Stockton, to depths greater than 35 feet. Greater depths will enhance navigation through the Delta to and from the Port. No federal budget has been proposed; and as of February 9, 2000, this project was not included on the California Water Commission's project listing.

San Joaquin River Basin-Farmington Groundwater Recharge & Wetland Restoration Project (Preconstruction and Engineering Studies)—$1,050,000

These are the preconstruction and engineering studies to be performed during fiscal year 2001. These studies and preliminary plans for fiscal year 2001 have been budgeted for $150,000. It is anticipated that additional funds will be needed in future years if a project proves to be feasible. At this point, it is too early to define a project or anticipate needed funding.

Water Resources Development Act, 1986, Improvement of Environment Program, Mormon Channel—$300,000

This is a new project that is being investigated to turn water back into the lower reaches of Mormon Slough below the Stockton Diverting Canal. This project was not funded in fiscal year 2000, nor is any funding allocated for fiscal year 2001. The City of Stockton and the San Joaquin Area Flood Control Agency are the local sponsors working with the United States Army Corps of Engineers in overseeing the investigation and feasibility study on this project.

BUREAU OF RECLAMATION

South Delta Barriers—$92,000

The project provides temporary barriers in the south Delta to improve water quality in the lower San Joaquin River. The fiscal year 2000 budget included funding for $20,000 and the President's fiscal year 2001 budget includes funding for $92,000.

Water Acquisition-VAMP—$1,500,000

This project provides funds for the purchase of water to meet water quality and flow goals in the Delta (April-May and October). VAMP flows could reduce San Joaquin river flows in summer months. In fiscal year 1999, VAMP was funded at $2 million; in fiscal year 2000 it was not funded, but $1.5 million is recommended for fiscal year 2001.

The City of Stockton conditionally supports the following project:

BUREAU OF RECLAMATION

Bay-Delta Ecosystem Restoration—CALFED—$60,000,000

Current fiscal year 2000 funding is for $95 million and the President's fiscal year 2001 budget has included $60 million. Funds for this program have been used primarily for acquisition of lands and development of the habitat and improvements for fishery enhancement or protection. Although the City of Stockton appreciates CALFED's assistance with Woodbridge Irrigation District's efforts to enhance the Mokelumne River and with other potential conjunctive use projects such as the Farmington Recharge project, the City is concerned that the overall CALFED program is overlooking the need for surface water and groundwater supply requirements within the County of San Joaquin and the relationship these projects bear to Bay-Delta ecosystem restoration. The CALFED program does not recognize area of origin protections; and CALFED has not developed water quality improvement objectives for San Joaquin County water supplies. CALFED has not provided documentation or explanation of the benefits that will be derived from the expenditure of funds, particularly to displace agricultural lands. The City of Stockton cannot be fully supportive of the CALFED program until these discrepancies are corrected.

STOCKTON CITY COUNCIL

WHEREAS, the California Water Commission has developed preliminary recommendations to Congress for funding of water, flood control, and fishery projects for fiscal year 2001; and

WHEREAS, the Commission is scheduled to meet in Sacramento on March 3, 2000, to adopt final funding recommendations; and

WHEREAS, each year the Congressional committees consider funding for flood control and reclamation appropriation; and

WHEREAS, the projects that staff suggest that Council support this year may affect flood control or represent potential surface water supplies for the Stockton area, or are projects which affect our environment; now, therefore

BE IT RESOLVED BY THE COUNCIL OF THE CITY OF STOCKTON, AS FOLLOWS:

1. That the City of Stockton supports the recommendations of the County Board of Supervisors to Congress for federal funding of water, flood control, and fishery projects for fiscal year 2001.

2. That corresponding statements be forwarded to the City's federal legislators and to the Congressional Subcommittees on Energy and Water Development.

PASSED, APPROVED, and ADOPTED FEB. 29, 2000.

GARY A. PODESTO,
Mayor of the City of Stockton.

PREPARED STATEMENT OF THE LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

We strongly support the California Water Commission's recommendation to the Committee for $9.821 million to fund the completion of the Los Angeles County Drainage Area (LACDA) project.

Mr. Chairman and Members of the Committee: We appreciate your Committee's continued support of critical flood control and water conservation projects in Los Angeles County, California.

BACKGROUND

Floods are a part of the history of the Los Angeles area. Widespread floods have periodically devastated vast areas of the region and were responsible for taking lives, damaging property and interrupting commerce and trade.

The U.S. Army Corps of Engineers and County of Los Angeles, acting on behalf of the Los Angeles County Flood Control District, have built one of the most extensive flood control systems in the world. Construction of the major elements of the system began in the 1920s and consisted of 20 major dams, 470 miles of open channels, and many other appurtenant facilities. Fifteen of these major dams are owned and/or operated by the County while the remaining five dams (Hansen, Lopez, Santa Fe, Sepulveda and Whittier-Narrows), are owned and operated by the Corps. Since the major segments were completed, it is estimated that the system has prevented $3.6 billion in potential flood damage.

Development which occurred after World War II exceeded the projections the Corps used in the 1930s and has increased runoff to the point where, even in a mod-

erate storm, the runoff could exceed the design capacity of portions of the system. For example, the lower Los Angeles River in the City of Long Beach came close to overtopping in 1980 from a 25-year flood. A storm of greater magnitude would have a tremendous impact, both personal and economic, on Los Angeles County, the nation's second largest metropolitan area.

At the request of the County of Los Angeles, the Corps analyzed the adequacy of the existing major flood control facilities serving the Los Angeles basin in the LACDA Review study. In 1990, a project to upsize a portion of the LACDA system received Congressional approval subject to a favorable report by the Chief of Engineers (received in 1995), and signature of the Record of Decision by the Secretary of the Army, which was obtained in July 1995. The final report by the Corps identified 100-year flood damages totaling $2.25 billion covering an 82-square-mile area which houses over 500,000 people. These damages would occur in the heavily-urbanized Los Angeles basin, where adequate protection from a 100-year flood was previously provided.

The LACDA project is a critical modification to existing facilities. Obtaining funds to do the modification is critical for two reasons:

1. The threat of flooding to over one-half million people.
2. The large economic impact FEMA's final Flood Insurance Rate Maps (FIRMs) have on the overflow area that became effective July 6, 1998.

Until the project is completed, any delay in construction will cause great financial hardship on thousands of people, who thought the existing river provided adequate protection and now need to buy flood insurance (an impact of $33 million annually).

This project, currently estimated to cost approximately $200 million, is scheduled to be completed by December 2001, pending adequate funding. The following table shows the history of federal funding for the project:

[In millions of dollars]

Federal fiscal year	Federal funding	Expenditure of federal funding
1994–1995	0.5	Initiation of first construction contract awarded in September 1995.
1995–1996	11.3	Continuation of first contract and initiation of two contracts awarded in August and September of 1996.
1996–1997	14.4	Completion of first three contracts.
1997–1998	20.7	Initiation of four contracts awarded in February, May and September 1998.
1998–1999	50.0	Completion of contract awarded in May 1998; Continuation of contracts awarded in February and September 1998; and Initiation of three contracts awarded in December 1998 and August 1999.
1999–2000	50.0	Completion of contracts awarded in February, September and December 1998, and August 1999; and Continuation of other contracts awarded in September 1998 and August 1999.

The final seven construction contracts will be ready for advertising later this fiscal year allowing the entire project to be completed by the end of 2001.

In light of the serious flood threat and the devastating financial impacts of the mandatory flood insurance premiums, it is critical to maintain the level of construction activity at $9.821 million this upcoming fiscal year. As a result, we strongly support the California Water Commission's recommendation for $9.821 million of Federal funds to complete the LACDA Project.

Prepared Statement of the San Joaquin Area Flood Control Agency

Mr. Chairman and Members of the Subcommittee: The San Joaquin Area Flood Control Agency (SJAFCA) completed construction of the Stockton Metropolitan Area, Phase I—Urban Portion of the Flood Protection Restoration Project (FPRP) in November 1998. The FPRP restored the 100-year level flood protection the community enjoyed prior to a FEMA restudy and publication of draft Flood Insurance Rate Maps (FIRMs). The draft FIRMs indicated FEMA's intent to remap a vast new floodplain in both the City of Stockton and adjoining portions of San Joaquin Coun-

ty. New FIRMs reflecting the new 100-year flood plains after construction of Phase I—Urban Portion are expected from FEMA this year.

The FPRP was split into two phases. Phase I—Urban Portion was planned, designed and constructed by SJAFCA. Phase II—Rural Portion has been preliminarily studied by SJAFCA in 1995 and studied as part of a Federal Corps of Engineers (COE) Reconnaissance study of the Stockton Metropolitan Area covering both the Urban and Rural Portions. The COE Reconnaissance Study was completed in 1997 and found that there was a Federal interest in both the Urban and Rural Portions. The COE is about to complete a Section 211 Study of the completed Phase I—Urban Portion to establish the eligible Federal reimbursement as specified in WRDA 1996, Section 211. The SJAFCA project was one of eight specific demonstration projects named throughout the nation and will be the first such project to be completed from the beginning to end by a local entity. The COE is also currently beginning a Feasibility Study for the Phase II—Rural Portion of the SJAFCA project. However, there is no current budget for the Corps of Engineers to begin any Section 211 reimbursements to SJAFCA for the Phase I completed project as specified in Section 211 of WRDA 1996 and 1999.

SJAFCA has already received a $12,625,000 reimbursement from the State of California. This represents the estimated State's share of the local share of a normal Federal project for Phase I—Urban Portion of the FPRP. We are now requesting that money be added to the Federal budget in fiscal year 2001 to allow at least the start of the Federal reimbursement for the customary Federal share of the Phase I—Urban Portion of the project.

Under the provisions of Section 211 of WRDA 1996 and 1999, SJAFCA and the COE are finalizing a Section 211 Report, which will document that the Phase I—Urban Project meets Federal standards and the amount of the project costs that will be eligible for reimbursement by the COE. We expect this report to be completed by the Sacramento District in March 2000 and forwarded to the Secretary of the Army for his approval. However, the ability to receive any Federal refund requires an appropriation in the Federal budget.

We are endeavoring to include the necessary funds in the fiscal year 2001 COE budget in the anticipation of the Secretary of the Army's approval in early 2000 so we can realize the benefit of Federal reimbursement as quickly as possible. Accordingly, we understand it is necessary to obtain a line item for a "New Project—Construction Start" authority in the fiscal year 2001 construction portion of the budget for the COE. The total reimbursement, which is recommended for approval is $38 million. However, we understand that the Congress enacted legislation, which would limit the reimbursement to $10 million per year for each 211 project in the COE budgeting process. We also understand that there is an additional constraint to the total nationwide maximum amount of COE 211 reimbursements. Accordingly, we now anticipate that we would at best receive $10 million in fiscal year 2001, 02 and 03 and the balance in fiscal year 2004.

At this time, SJAFCA is requesting that funding of $10 million be provided under the COE Construction General account in the fiscal year 2001 budget for the Stockton Metropolitan Area, Section 211 reimbursement. The importance of obtaining the fiscal year 2001 "construction start" is crucial to reduce the bond interest charges that local property owners incur to repay bond debt and interest. The bond interest is approximately $2.5 million per year and the total debt repayment amount is about $4 million per year. It should be noted that Section 211 of WRDA 1996 and 1999 does not allow Federal reimbursement of interest costs.

SJAFCA has been able to design and construct a $70 million project in just 3½ years. SJAFCA also believes those local jurisdictions that do accomplish local flood control projects which are shown to have a Federal interest should be rewarded promptly and receive a high priority in the Federal budgeting process.

PREPARED STATEMENT OF THE COUNTY OF SAN JOAQUIN AND THE SAN JOAQUIN COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

San Joaquin County, located in the heart of California's central valley, has both a vibrant agricultural economic base and a burgeoning metropolitan growth. Both of these vital elements are vulnerable to the forces of nature. The 1997 flood inundated thousands of acres and threatened our major urban areas. The actual economic loss to the County in 1997 was staggering ($100+ million) and the potential loss due to flooding construction continues to be enormous. The San Joaquin Area Flood Control Agency (SJAFCA) has been formed and has constructed a $70 million flood control project with local funds to restore the Stockton Metropolitan Area to a 100-year level of flood protection. We have aggressively moved ahead with this

work to protect our people in anticipation that a credit for our work would be forthcoming against a Corps developed project. We are anxiously waiting for the Corps to obtain funds to pay for the federal interest in this project.

At the other extreme of the weather spectrum, San Joaquin is very vulnerable to drought-induced water shortages. Due to the export of our water by East Bay Municipal Utility District to the Oakland area and by the Bureau of Reclamation to the CVP, San Joaquin County is deficient of an adequate water supply in quantity and quality. Our ground water levels dramatically drop during a less than average water year. During these drops, the threat of salt water intrusion in our groundwater basin from the Delta is a major concern. We need to have the Corps complete the feasability study of the Farmington Groundwater Recharge and Wetland Restoration Project in order to increase the yield of the severely limited Stanislaus River supply, and we need to have Delta water quality protected by implementation of the United States Corps of Engineers and the United States Bureau of Reclamation delta projects.

As you can see, we are willing to invest in our future and we will continue to do so. The timely funding of these important studies is crucial to the economic well being of San Joaquin County. These projects represent studies that need to be conducted in order to resolve problems on flood control, water supply, water quality, groundwater and the environment in San Joaquin County. We need Federal help in several of these projects and we request Federal appropriations during fiscal year 2001 for the following Corps of Engineers and Bureau of Reclamation projects:

U.S. ARMY CORPS OF ENGINEERS

Sacramento and San Joaquin Rivers Comprehensive Study—$1,500,000
Sacramento and San Joaquin Delta Investigations—$300,000
San Joaquin River Basin Corral Hollow Creek—$965,000
San Joaquin River Basin Stockton Metropolitan Area (Section 211)—$10,180,000
—Reimbursement Study—($180,000)
—First Year of $38 Million Reimbursement—($10,000,000)
San Joaquin River Basin Farmington Groundwater Recharge and Wetland Restoration Project—$400,000
—Feasibility Study—($100,000)
—Pre-Construction Engineering and Design—($150,000)
—Start of New Construction—Phase 1—($150,000)
San Joaquin River Basin Cosumnes and Mokelumne Rivers—$150,000

BUREAU OF RECLAMATION

South Delta Barriers—$92,000
Bay-Delta Ecosystem Restoration—CALFED—$60,000,000

DETAILED COMMENTS

U.S. ARMY CORPS OF ENGINEERS

Sacramento and San Joaquin Rivers Comprehensive Study—$1,500,000

The San Joaquin River Comprehensive Study is an ongoing $26.5 million study of the water resources needs of the San Joaquin and Sacramento Rivers. Flood control and environmental needs will receive equal consideration. We expect setback levees and reoperation of existing reservoirs will receive careful review in this Study. The Phase 1 Comprehensive Study Interim Report to Congress was released this last spring, outlining $16 to $20 million in studies to be performed. The interim report developed the formulation of new master plans for flood control systems which incorporate ecosystem restoration. The report also provided a complete post flood assessment for the floods of 1983, 1986, 1995, and 1997. Hydrologic models and hydraulic UNET models will be developed during the current Phase 2 studies. An EIR /EIS will be published in 2002. The President approved $3.58 million for fiscal year 2000 and $1.5 million is proposed for fiscal year 2001. At this time, the exact allocation between each of the river basins is unclear, although 50–50 seems likely. The State is the cost-sharing partner in these Studies.

Sacramento and San Joaquin Delta Investigations—$300,000

This is a special study and a regional planning report which addresses multiple resource needs, including flood control, recreation, environmental restoration, navigation, water supply, etc. The California Department of Water Resources is the cost-sharing partner with the CALFED process. To date, field tests of levee-strengthening methods have been pursued and the study provides input to the CALFED process. The President's for this investigation is $300,000

San Joaquin River Basin Corral Hollow Creek—$65,000

This is a new project investigating flood control improvements to protect adjacent lands in the southern portion of the County and the nearby Deuel Vocational correctional facility. The President's Budget for this investigation for fiscal year 2001 is $65,000.

San Joaquin River Basin Stockton Metropolitan Area (Section 211)—$10,180,000

Before Federal dollars can be appropriated to reimburse the local agency (up to 75 percent reimbursement), a Section 211 Report must be completed and approved by the Secretary of the Army. The 211 Report was completed at the Sacramento office of the United States Army Corps of Engineers (Corps) in late 1999 justifying a reimbursement of as much as $38 million. This same report was forwarded to the Corps' office in Washington, D.C. for final review and approval. The President's 2001 budget of $180,000 is adequate to complete the required 211 Report and begin the feasibility report addressing rural flood control improvements. However, the Corps and the Federal Committee of Appropriations should allocate $10 million of the $38 million for fiscal year 2001, as a start of new construction in anticipation that reimbursement will be approved during fiscal year 2001. Thus, a total funding of $10,180,000 is requested for fiscal year 2001.

San Joaquin River Basin Farmington Recharge and Wetland Restoration Project—$400,000

The Study costs for continued investigations will determine if a Federal interest may exist for utilizing Farmington Dam for multiple purposes inclusive of flood control, groundwater recharge, and environmental enhancement. The President has included $100,000 in his fiscal year 2001 budget for completing this feasibility study. All Federal funds will be matched by the local sponsor, Stockton East Water District and other eastside water purveyors of San Joaquin County. Pre-construction Engineering and Design Plans for fiscal year 2001 have been budgeted for $150,000. It is anticipated that an additional $150,000 is also needed above the budgeted amount to continue with the studies and designs before commencing with an early pilot (Phase 1) portion of the anticipated project. The total project funds need to further all three phases of the project during fiscal year 2001 is $400,000.

San Joaquin River Basin Cosumnes and Mokelumne Rivers—$150,000

A reconnaissance study of ecological restoration and non-structural flood control improvements is being performed on the Mokelumne and Cosumnes Rivers. The current fiscal year 2000 funding is $50,000 and the President's fiscal year 2001 budget is $150,000. Separate studies and reports are continuing for the Cosumnes River (between the Delta and Michigan Bar) and the Mokelumne River (between the Delta and Camanche Reservoir). The East Bay Municipal Utilities District and Woodbridge Irrigation District are the local sponsors working with the United States Corps of Engineers on the Mokelumne River investigations. The Nature Conservancy is the local sponsoring agency with interests on the Cosumnes River.

BUREAU OF RECLAMATION

South Delta Barriers—$92,000

The project provides temporary barriers in the south Delta to improve water quality. The fiscal year 2000 budget included funding for $20,000, and the President's fiscal year 2001 Budget includes funding for $92,000.

The following project is recommended with conditional support:

Bay-Delta Ecosystem Restoration—CALFED—$60,000,000

Current fiscal year funding is for $95 million and the President's fiscal year 2001 Budget has included $60 million. Funds for this program have been used primarily for acquisition of lands, development of habitat, and fishery enhancement/protection improvements. Although the County supports CALFED's assistance with Woodbridge Irrigation District's efforts of enhancing the Mokelumne River and other potential conjunctive use projects such as the Farmington project, the County is concerned that the overall CALFED program is overlooking the need for surface water and groundwater supply requirements within the County of San Joaquin. The CALFED program does not recognize county area of origin protections; and there are no water quality improvement objectives to improve the water quality of San Joaquin County water supplies. There is no documentation of the benefits that will be derived from the expenditure of funds, particularly to displace agricultural lands.

DEPARTMENT OF ENERGY PROGRAMS AND ACTIVITIES

PREPARED STATEMENT OF OHIO STATE UNIVERSITY

Mr. Chairman, members of the subcommittee: As Chair of Board on Agriculture Budget Committee of the National Association of State Universities and Land Grant Colleges (NASULGC), I appreciate the opportunity to discuss the importance of inter-agency partnerships research in energy, environmental and natural resource programs.

The Board on Agriculture represents a national network of Land-Grant University-based nonprofit State Agricultural Experiment Stations (SAES) and State Cooperative Extension Services (CES). The Land Grant University system (LGU) and the Cooperative State Research, Education, and Extension Service (CSREES) have had a thriving partnership of many years, providing the technology which has made American agriculture the most productive and efficient in the world. Our universities are committed to advancing scientifically based decision making at the local level by capitalizing on the Land-Grant University comparative assets in research, education, and extension. From the Land Grant University program base, the Fund for Future Agriculture and Food Systems has bio-based technologies as a key goal. This grant program provides a mechanism to generate competitively awarded research, extension and education (technology transfer). However, this is not enough. Partnerships with the Department of Energy and others need to be created for bio-energy research to thrive.

President Clinton's recently announced bipartisan bio-energy and bio-products tax incentives proposal is a crucial step for the advancement of these technologies. As you know, the President's fiscal year 2001 budget includes $976 million in tax incentives over 5 years and $2.1 billion over ten years to accelerate the development and use of bio-based technologies, which convert crops, trees, and other "bio-mass" into a vast array of fuels and products. These tax credits support the August 1999 Executive Order 13134 and Memorandum on Promoting Bio-based Products and Bio-energy, aimed at tripling U.S. use of bio-based products and bio-energy by 2010. This initiative will increase the viability of alternative energy sources, help meet environmental challenges like global warming, support farm incomes, and diversify and strengthen the rural economy.

I wholeheartedly endorse these targeted tax credits for the advancement of bio-mass technology. As important as they are to this technology's advancement, tax credits alone won't get us there. I believe technology transfer models like those in place at our Land Grant Universities are crucial to our ultimate success. Specifically, university and federal joint venture partnerships could be formed to integrate intellectual assets and science infrastructures, and then move-out the products of these joint ventures quickly into practical applications to be used in the real world.

It is important to note that one of the keys to advancing this "big" technology may be found in small-scale capacity. In the area of small farms, extensive research expertise already exists among the Land Grant system, especially in our Historically Black Universities and Colleges (1890 institutions), about how agriculture is practiced on small-scale farms. I believe small farmers collectively could have a big contribution to make in the future development of biomass.

As a key anchor in the real world of agriculture, the State Cooperative Extension Services would be the cornerstone of our proposed technology transfer and education delivery model to the ultimate end user—the American Farmer.

SAES and CES's major focus in the energy and related environmental areas include:

—Bio-mass/bio-fuels energy system technology development;
—Global climate change or carbon sequestration/forming;
—Environmental modeling and forecasting;
—Renewable energy research and production;
—Earth science applications and technologies; and;
—Environmental education and outreach.

Through a variety of means, a partnership between the Department of Energy and the Land Grant University system as well as NASA, NOAA, NSF and other agencies would increase:

—The rate of technology transfer and development between the partners;
—the amount of LGU participation in agency peer review processes;
—the quantity/quality of proposals submitted by the Land-Grant Universities for government funded competitive grants in related energy/agricultural areas;
—the exchange of scientists between LGU institutions and the government for collaborative projects.

For example, the Department of Energy and USDA (through the Land Grant System) could jointly develop bio-mass technology, which could lead to increased use of ethanol as an alternative to gasoline. Recent prospective breakthroughs in genetic engineering and processing are radically changing the technical possibilities in favor of ethanol as a viable transportation fuel. New biocatalysts of genetically engineered yeast and bacteria are making it possible to use virtually any plant or plant product through cellulosic bio-mass to produce ethanol. This new technology may decisively reduce cost to the point where petroleum products would face competition. Genetically engineered micro-organisms and new processing techniques can similarly make it possible to utilize most plant matter for fuel.

To expand the explanation provided earlier about this technology's environmental value, increased use of bio-mass fuels stands out as an excellent way to introduce an environmentally friendly energy technology that has a chance of having a decisive impact on the risk of climate change. Renewable fuels produced from plants are an outstanding way to substantially reduce greenhouse gases. Although ethanol consumption as a fuel releases carbon dioxide into the atmosphere, it is the same carbon dioxide that was fixed by photosynthesis when the plants were living. Of course, the CO_2 released from burning fossil fuels comes from sources deep underground which would never have been released unless removed by mankind.

In addition, the issue of global climate provides an excellent partnering opportunity. By its very nature, it is an extremely complex issue involving a wide range of disciplines and one which crosses a considerable number of agencies. It is this type of issue which lends itself to the establishment of partnerships. The very nature of the problem is something that the agricultural community has in effect been attempting to accomplish from the time mankind began to cultivate crops, i.e., increase the growth of food and fiber, a process that depends upon the incorporation of CO_2. In this regard, agriculture and the Land Grant University system has spent vast amounts of research and has a unique structure that could certainly contribute to a partnership concerned with CO_2 mitigation.

Within the last two decades, agriculture has seen a change in farming known as "no-till" farming. It is the practice of returning organic (carbon containing materials) back to the land. In parts of the U.S.A. where soil organic matter falls below I percent, the re-incorporation results in a more productive soil and there is an effective means of removing CO_2 from the atmosphere. Thus there are two winners, the grower who produces more food or fiber on the land with improved productivity and the environmentalist who witnesses a lower CO_2 level in the atmosphere. Such situations not only provide a win for each of the participants in the partnership, but because of a joint success, there is increased support from the supporters of the research.

DOE and other agencies have existing and new initiatives to address many of the nation's energy and environmental problems. The Land Grant University system plans to encourage interagency communication and to broaden Land-Grant Universities federal participation in USDA at the local level. A well-planned initiative could unify representatives from the State Agricultural Experimentation Stations and the State Cooperative Extension Services, Natural Resource Conservation Service (NRCS), the Forest Service, and the Agricultural Research Service and extend this unified expertise to the energy and environmental missions of DOE. SAES and CES have identified existing resources in agencies for various programs which are targeted at addressing the scientific infrastructure between agriculture, the environment and the nation's need for energy.

Endorsed programs areas	Department/Agency
Bio-mass/biofuels energy systems: Alternative Fuels Development	DOE
Carbon Sequestration	DOE/EPA/USDA
Global Climate	DOE/NOAA
Socio-economic Dimensions	DOE/NOAA
National Renewable Energy Laboratory	DOE
Precision Agriculture and Forestry	DOE/NASA/OES
Remote Sensing Applications	DOE/USDA/NASA
Geospatial Extension	DOE/NASA

SAES and CES would be pleased to provide an expanded "on-the-ground" and "in-the-field" role for the LGU System on energy and environmental issues and research. I hope I have highlighted the science benefits and value of partnerships between the Land Grant system and DOE and other agencies to solve some of the na-

tion's pressing energy and environmental problems. The Land-Grant University System stands ready to help.

PREPARED STATEMENT OF THE AMERICAN MUSEUM OF NATURAL HISTORY

ABOUT THE AMERICAN MUSEUM OF NATURAL HISTORY

Founded in 1869, the American Museum of Natural History [AMNH] is one of the nation's preeminent institutions for scientific research and public education. It is home to one of the world's largest natural history collections and premier research programs. Throughout its history, the Museum has pursued its joint missions of science and education, of examining critical scientific issues and educating the public about them. It is renowned for its exhibitions and collections, which serve as a field guide to the entire planet and present a panorama of the world's cultures. Its explorers and scientists have pioneered discoveries and offered us new ways of looking at nature and human civilization. The Museum's power to interpret wide-ranging scientific discoveries and convey them imaginatively has inspired generations of visitors to its grand exhibition halls and educated its three million annual visitors—500,000 of them schoolchildren—about the natural world and the vitality of human culture.

The American Museum in many ways is similar to a research university, with its scientific faculty from diverse fields such as earth and planetary sciences, astrophysics, biology and genomics science, anthropology, and all branches of zoology. Today more than 200 active Museum scientists with internationally recognized expertise, led by 47 curators, conduct laboratory and collections-based research programs as well as field work and training. Scientists in five divisions (Anthropology; Earth, Planetary, and Space Sciences; Invertebrate Zoology; Paleontology; and Vertebrate Zoology) are sequencing DNA and creating new computational tools to retrace the evolutionary tree, documenting changes in the environment, making new discoveries in the fossil record, and describing human culture in all its variety. The Museum also conducts graduate training programs in conjunction with a host of distinguished universities, supports doctoral and postdoctoral scientists with highly competitive research fellowships, and offers talented undergraduates an opportunity to work with Museum scientists.

The AMNH collections of some 32 million natural specimens and cultural artifacts are a major scientific resource providing the foundation for the Museum's interrelated research, education, and exhibition missions. They often include endangered and extinct species as well as many of the only known "type specimens," or examples of species by which all other finds are compared. Within the collections are many spectacular individual collections, including the world's most comprehensive collections of dinosaurs; fossil mammals; Northwest Coast and Siberian cultural artifacts; North American butterflies; spiders; Australian and Chinese amphibians; reptiles; fishes outside of their home countries; and one of the most important bird collections. Collections such as these are historical libraries of expertly identified examples of species and artifacts, associated with data about when and where they were collected, providing an irreplaceable record of life on earth. Such collections provide vital data for Museum scientists as well as more than 250 national and international visiting scientists each year.

The Education Department builds on the Museum's unique research, collections, and exhibition resources to offer rich programming dedicated to increasing scientific literacy, to encouraging students to pursue science and museum careers, and to providing a forum for exploring the world's cultures. Each year hundreds of thousands of students, teachers, and schools participate in workshops, courses for college credit, and Museum visits; more than 500,000 students and teachers visit on school trips, prepared and supported by curriculum resources and workshops. The Museum is also reaching beyond its walls: through its National Center for Science Literacy, Education, and Technology, launched in 1997 in partnership with NASA, it is exploiting new technologies to bring learning and discovery, materials, and programs into homes, schools, museums, and community organizations around the nation.

Exhibitions are among the Museum's most potent educational tools, translating AMNH scientific knowledge and discovery into three dimensions. The Museum is proud to continue its tradition of creating some of the world's greatest scientific exhibitions. In February 2000, in one of the most exciting chapters in the Museum's long and distinguished history of advancing science and education, it opened the spectacular new Rose Center for Earth and Space. The Rose Center includes a newly rebuilt and updated Hayden Planetarium that allows visitors to journey among the stars and planets in our own and in other galaxies; and the Lewis B.

and Dorothy Cullman Hall of the Universe, where interactive technology and participatory displays elucidate important astronomy and astrophysics principles. The centerpiece of the Rose Center is an 87-foot-diameter sphere housed in a glass cube. Its top half contains the planetarium's state-of-the-art Space Theatre; its bottom half, the Big Bang, a dramatic multimedia recreation of the first moments of the universe.

Adjoining the Rose Center is the Hall of Planet Earth, which opened in 1999 and explores the processes that determine how the Earth works—how it has changed though time; why ocean basins, continents, and mountains exist; what causes climate change; and why the Earth is habitable. Its exhibits explore the question of natural resources: what are they; what resources are necessary to generate energy (oil, coal, geothermal); where are they located; and how are they formed. The Hall of Planet Earth in turn leads to the recently opened Hall of Biodiversity. Together, the new planetarium and halls provide visitors a seamless educational journey from the universe's beginnings to the Earth's formation and processes to the extraordinary diversity of life on our planet.

SUPPORT FOR DEPARTMENT OF ENERGY MISSION AND GOALS

The American Museum shares with DOE fundamental commitments to cutting-edge research, technology in support science and education, and science education and literacy. As the nation's third largest government sponsor of basic research and a major source of support for laboratory equipment and instrumentation, DOE is one of the world's preeminent science organizations. Its primary strategic goals also include promoting science literacy and educating the next generation of scientists. The Museum seeks a partnership with DOE to leverage our complementary resources and mutually strengthen our abilities to advance our shared goals.

Genomics Science

DOE is a leader in genomics research, instrumentation, and advanced sequencing technologies. The American Museum, in turn, is home to a preeminent molecular research effort. Indeed, natural history and genomic science are intricately related. The AMNH molecular systematics program is at the forefront of the analysis of DNA sequences for evolutionary research. In its molecular laboratories, now in operation for nine years, more than 40 researchers in molecular systematics, conservation genetics, and developmental biology conduct genetic research on a variety of study organisms.

The Museum is also expanding its collection techniques to include the preservation of biological tissues and molecular libraries in a super-cold storage facility for current and future genetic study. This collection is a unique and valuable resource for worldwide research in such fields as conservation genetics, systematics, and medicine. Such a tissue collection will preserve genetic material and gene products from rare and endangered organisms that may go extinct before science fully exploits their potential. With nearly 40,000 samples already collected, it will be the largest super-cold tissue collection in the world and will increase the possibilities for DNA research exponentially. We also plan an on-line geographically based collection database to ensure access to the public as well as to facilitate loans to scientists outside the Museum.

Parallel Cluster Computing

Parallel computing is an essential enabling technology in phylogenetic analysis. A new, 256-processor cluster recently constructed in-house by Museum scientists is the fastest parallel computing cluster in an evolutionary biology laboratory and one of the fastest installed in a non-defense environment. It allows Museum scientists to examine the effectiveness and computational behavior for large real-world data sets, and will be central to all Museum projects in evolutionary and genomics research.

INSTITUTE OF COMPARATIVE GENOMICS

The Museum proposes to establish, in partnership with DOE, an Institute of Comparative Genomics so as to contribute its unique resources and expertise to the nation's genomic research enterprise. A full understanding of the impact of the knowledge we have gained from genomics and molecular biology can come from placing genomic data in a natural history perspective; comparative work in genomics will enrich our knowledge not only of biodiversity, but also of humans, medicine, and life itself.

With the advent of DNA sequencing, museum collections have become critical baseline resources for the assessment of the genetic diversity of natural populations, as well as for pursuit of research questions pertinent to DOE's interests. Genomes,

especially those of the simplest organisms, provide a window into the fundamental mechanics of life. One of the goals of DOE's Human Genome Project is to learn about the relevance to humans of nonhuman organisms' DNA sequences. DOE also supports an area in which the AMNH is expanding its expertise—microbial genomics, the study of organisms that have survived and thrived in extreme and inhospitable environments. This research can yield information that can be applied in solving challenges in health care, energy sources, and environmental cleanup. The AMNH comparative genomics program could provide vital tools in these endeavors and support DOE's biological and environmental research function (the BER account).

Over the past year the Museum has established its parallel computing facility, enhanced the molecular labs with state-of-the-art DNA sequencers, and initiated the super cold storage facility. Thus initially equipped, the Institute will be one of the world's premier research facilities for mapping the genome across a comprehensive spectrum of life forms, drawing on comparative methods and biological collections.

The Institute will focus on molecular and microbial systematics; expanding our understanding of the evolution of life on earth through analysis of the genomes of selected microbes and other non-human organisms; and constructing large genomic databases for conservation biology applications. Research programs may include the study of the utility of genomic information on organismal form and function; microbial systematics; the construction of large genomic databases for conservation biology applications; and the use of broad scale comparative genomic studies to understand the function of important biomolecules.

The Institute's scope of activities will include: an expansion of the molecular laboratory program that now trains dozens of graduate students every year; the utilization of the latest sequencing technologies; employment of parallel computing applications that allow scientists to examine the effectiveness and computational behavior of large real world datasets; and operation of the frozen tissue collection as a worldwide scientific resource, with at least 500,000 samples accessioned in the first phase alone, an active loan program, and ready public on-line access.

In addition to research, the Institute for Comparative Genomics will include education and outreach activities, an international conference featuring leading scientists and policymakers, and a major public exhibition on genomics. In conjunction with the exhibition, the Museum may also publish an electronic bulletin on genomics to be located in the Hall of Human Biology. The bulletin would be modeled after the popular Earth, Bio, and AstroBulletins in the newest exhibit halls that display changing science news, linked to interactive kiosks and websites.

In establishing the Institute, the Museum plans to expand its curatorial range in microbial work; add lab space to accommodate additional curators and students; grow the super-cold tissue collection; and draw on our exhibition and educational expertise to offer enhanced public education and outreach.

We seek $10 million to partner with DOE in establishing the Institute for Comparative Genomics at the Museum.—In partnership, the Museum and DOE will be positioned to leverage their unparalleled resources to advance joint genomics research, education, and technology goals. As well, development of the super-cold tissue collection will increase exponentially the possibilities for DNA research and provide an invaluable resource to scientists worldwide. Our planned collection database available on the Internet will ensure public access to genomics information, furthering DOE's own goals for fostering public understanding of human genomics and the fundamental building blocks of life.

Prepared Statement of the University Corporation for Atmospheric Research

On behalf of the University Corporation for Atmospheric Research (UCAR) and the university community involved in weather and climate research and related education, training and support activities, I submit this written testimony for the record of the U.S. Senate Committee on Appropriations, Subcommittee on Energy and Water Development.

This year UCAR, a university membership consortium composed of 63 North American institutions that grant the Ph.D. in atmospheric, oceanic, and related sciences, celebrates its fortieth anniversary of scientific discovery and university partnerships. The UCAR mission is to support, enhance, and extend the capabilities of the university community, nationally and internationally; to understand the behavior of the atmosphere and related systems and the global environment; and to foster the transfer of knowledge and technology for the betterment of life on earth.

UCAR is a non-profit, Colorado-based corporation that manages and operates the National Center for Atmospheric Research (NCAR) and the UCAR Office of Programs (UOP). It is supported by the National Science Foundation (NSF) and other federal agencies including the National Oceanic and Atmospheric Administration (NOAA), the National Aeronautics and Space Administration (NASA), the Department of Energy (DOE), the Environmental Protection Agency (EPA), the Department of Defense (DOD), and the Federal Aviation Administration (FAA). In addition to its member universities, UCAR has formal relationships with approximately 100 additional undergraduate and graduate schools including several historically black and minority-serving institutions and 38 international universities and laboratories.

Within the Department of Energy, we would like to comment on the following programs:

BIOLOGICAL AND ENVIRONMENTAL RESEARCH (BER)

On behalf of this country's atmospheric sciences community, we urge the Committee to support the fiscal year 2001 request of $445.3 million for BER. This is a $12.4 million increase over the fiscal year 2000 appropriated amount of $432.9 million. BER programs, particularly those involving support of peer-reviewed research at universities and national laboratories, are of great importance to the atmospheric sciences researchers focussing on climate change and climate change impacts. BER's Environmental Sciences Division is particularly critical as its programs improve our understanding of the Earth's radiative energy balance, improve predictions of climate change induced by greenhouse gases, quantify sources and sinks of greenhouse gases and aerosols, and improve our ability to assess the potential consequences of climate change.

Division programs in which we have much interest include the following:

Atmospheric Radiation Measurement (ARM) Program

Within the Environmental Processes Area of the BER proposed budget under Climate and Hydrology, we urge the Committee to support the fiscal year 2001 request of $14.1 million for ARM Program research.—This is a 7.6 percent increase over the fiscal year 2000 amount of $13.1 million. ARM is a key component of DOE's research strategy to address global climate change and is an important component of the interagency U.S. Global Change Research Program (USGCRP). ARM data are critical to the improvement of General Circulation Models (GCMs), which simulate the entire global circulation of the atmosphere, and to our understanding of climate change responses to increasing greenhouse gases. Current ARM research foci include the significant role of clouds in climate, the radiation balance of the atmosphere, and the interactions of solar and infrared radiation with water vapor and aerosols. These atmospheric processes are critical to understanding and predicting changes in global and regional temperature and precipitation patterns that result from anthropogenic and natural influences. Approximately 50 principal investigators, most of them from the university community, will be supported in fiscal year 2001, and interactions and collaborative work with prominent climate modeling centers will be enhanced.

ARM also performs a great service to the atmospheric sciences community by supporting several students involved in the UCAR-managed program, Significant Opportunities in Atmospheric Research and Science (SOARS). SOARS is a four-year graduate and undergraduate program for students pursuing careers in the atmospheric and related sciences. In its relatively short history, SOARS has already increased the number of under-represented students in this scientific area by a significant percentage. ARM is contributing to the SOARS effort to ensure that tomorrow's scientific workforce reflects the diversity of our citizenry and provides opportunity to all students.

Climate Modeling

Also within Climate and Hydrology within the Environmental Processes area of BER, we urge the Committee to support the fiscal year 2001 request of $27.9 million for the Climate Modeling effort.—This is a 17.2 percent increase over the fiscal year 2000 amount of $23.8 million for this important contribution to the USGCRP and integrates the BER climate modeling programs, including the successful Computer Hardware, Advanced Mathematics, and Model Physics (CHAMMP) activity. This increase will support the development of the next generation circulation models and smaller scale climate model simulations for global and regional studies of environmental changes. Technologies and computational resources will be developed that will help the scientific research community work efficiently with large datasets of observational and modeling data. Teams involving national laboratories and the university community will be assembled to produce and apply the datasets to the study

of both global and regional climate change and accompanying environmental impacts. This work is of great importance to our understanding of the manner in which climate change, natural or otherwise, affects specific areas of the country with ramifications to local environmental and economic systems.

ADVANCED SCIENTIFIC COMPUTING RESEARCH

We urge the Committee to support the DOE initiative, Advanced Scientific Computing Research (ASCR), at the proposed fiscal year 2001 level of $182.0 million.—This is a 42.2 percent increase over the fiscal year 2000 amount of $127.9 million for this important contribution to computational science. ASCR activities complement the work of and enable progress in the Climate Modeling initiative described above. ASCR's continued progress is of particular importance to atmospheric scientists involved with coupled general circulation model development, research that takes enormous amounts of computing power. If the United States is to continue to play a key role in determining the components that influence climate behavior and further developing scientific methods to successfully predict climate change, then the country's scientists must have access to enhanced computer simulation and modeling technology and software.

Specifically, the fiscal year 2001 ASCR increase will support the development and deployment of new mathematical models, computational methods, and scientific codes to take full advantage of the capabilities of terascale computers to solve critical scientific problems in the atmospheric and oceanographic sciences. Software will be developed and deployed to accelerate the development of and protect long-term investments in scientific codes, to achieve maximum efficiency on high-end computers, and to enable a broad range of scientists to use simulation in their research. Research will also include network technologies and software research to link geographically separated researchers, to facilitate movement of large (petabyte) data sets, and to ensure that academic scientists can fully participate in terascale computing. Proposals from teams involving national laboratories and the university community will be peer reviewed and competitively selected to participate in the research.

On behalf of UCAR, I want to thank the Committee for the important work you do for U.S. scientific research, education, and training. We appreciate your attention to the recommendations of our community concerning the fiscal year 2001 budget.

PREPARED STATEMENT OF THE UNIVERSITY OF ROCHESTER

SUMMARY AND REQUESTED ACTION

The inertial confinement fusion (ICF) program is a key element in the Department of Energy's (DOE) Stockpile Stewardship Program (SSP). It was formally initiated by the fiscal year 1994 Defense Authorization (Public Law 103–160) to "establish a stewardship program to ensure the preservation of the core intellectual and technical competencies of the United States in nuclear weapons." The ICF program provides access to high-energy-density physics data important in the design and understanding of nuclear weapons. In fiscal year 2001 the program will be focused on the use of available facilities. The principal facilities include the OMEGA laser at the University of Rochester's Laboratory for Laser Energetics (LLE) and the Z machine at Sandia National Laboratories (SNL). Smaller facilities—the Nike laser at the Naval Research Laboratory (NRL) and the Trident laser at the Los Alamos National Laboratory (LANL)—will also be used. The 1999 decommissioning of the Nova laser at Lawrence Livermore National Laboratory (LLNL) required many experiments conducted by the weapons laboratories to shift to the OMEGA facility at LLE. ICF experiments support the demonstration of thermonuclear ignition and gain on the National Ignition Facility (NIF) under construction at LLNL and provide important data in support of National SSP activities. Changes in the NIF schedule and capabilities make SSP much more reliant on existing facilities, such as OMEGA, located at the University of Rochester.

LLE (since 1970) is the only ICF program that has been jointly supported by the Federal Government, State government, industry, utilities, and a university. LLE makes fundamental scientific contributions to the National program. The Laboratory transfers technology to the public and private sectors through the training of graduate students and interactions with industry and other Federal laboratories. The Laboratory serves as a National Laser Users' Facility benefiting scientists throughout the country. The OMEGA laser, the highest-power ultraviolet fusion laser in the world, is the principal laser facility for SSP activities for DOE in fiscal year 2001 and for many years to come.

LLE's primary ICF mission is to validate the direct-drive option for ICF, including ignition and gain on the NIF. DOE proclaimed that OMEGA is also needed to meet mission-critical requirements for the indirect-drive ignition plan developed by DOE for the NIF, and to conduct experiments to support the SSP mission, including some that are classified, in collaboration with the National laboratories.

OMEGA is the only operating facility that can demonstrate the scientific potential of direct drive to provide a modest- to high-gain energy option for the Nation. The Inertial Confinement Fusion Advisory Committee emphasized the priority of cryogenic experiments on OMEGA.[1] The recent Secretary of Energy Advisory Board (SEAB) National Ignition Facility Laser System Task Force Interim Report[2] noted the importance of continuing scientific contact with ". . . the laser-based research at the University of Rochester." Upon completion of the NIF, OMEGA will continue to be used when full NIF energy or capability is not required, particularly since the cost per shot on OMEGA is considerably less than that on the NIF. The repetition rate of OMEGA (one shot per hour) is also higher than that planned for NIF (several shots per day).

To provide the support for program deliverables and the operation of OMEGA (for both ICF experiments and SSP experiments), and to maintain the training programs at Rochester, a total authorization and appropriation of $32,200,000 for the University of Rochester for fiscal year 2001 is required, as contained in the Administration's budget request for DOE.

BACKGROUND

Thermonuclear fusion is the process by which nuclei of low atomic weights, such as hydrogen, combine to form higher atomic weight nuclei such as helium. In this process some of the mass of the original nuclei is lost and transformed to energy in the form of high-energy particles. Energy from fusion reactions is the most basic form of energy in the universe. Our sun and other stars produce energy by thermonuclear fusion reactions occurring in their interior. Fusion is also the process that provides the vast destructive power of thermonuclear weapons.

To initiate fusion reactions, the fuel must be heated to tens of millions of degrees. In ICF the heating and compression of fusion fuel occur by the action of intense laser or particle beams. There are two approaches to ICF, direct and indirect drive. Indirect drive involves the conversion of beam energy to x-rays to compress a fuel capsule in an enclosure called a hohlraum. Direct drive involves the direct irradiation of a spherical fuel capsule by energy from a laser and is generally more efficient energetically than indirect drive. In either approach, if very extreme density and temperature conditions are produced, it is possible to produce many times more energy in these fusion reactions than the energy provided by the drivers.

INERTIAL CONFINEMENT FUSION PROGRAM FOCUS

As noted in the recent U.S. Department of Energy Stockpile Stewardship Program 30-day Review,[3] "The mission of the National Inertial Confinement Fusion program is to execute high energy density physics experiments for the Stockpile Stewardship program, an important part of which is the demonstration of controlled thermonuclear fusion in the laboratory. Technical capabilities provided by the ICF program also contribute to other DOE missions including nuclear weapons effects testing and the development of inertial fusion power." The NIF project completion date and schedule to achieve its full capabilities have changed since the project's inception. While NIF is under construction, OMEGA is the principal ICF facility used for nuclear weapons stewardship experiments by LLNL, SNL, and LANL, and for direct- and indirect-drive ICF experiments. Additionally, LLE will conduct experiments for the SSP in fiscal year 2001 under three categories: equation of state of D_2 and foam materials; properties of metals within high-pressure shocks; and the development of a testbed for hydrodynamic instability studies and advanced nonlinear diagnostics. OMEGA will also be used to support experiments in fiscal year 2001 that are part of a DOE bilateral agreement with the French Atomic Energy Commission.

LLE is the primary focus in the U.S. for the direct-drive approach to ICF. Direct drive may ultimately prove to be the best approach to ICF and provide the most efficient path to a laboratory-scale thermonuclear capability for both energy re-

[1] Inertial Confinement Fusion Advisory Committee Report to Assistant Secretary Reis (February 21, 1996).

[2] "Interim Report of the National Ignition Facility Laser System Task Force," Secretary of Energy Advisory Board, U.S. Department of Energy, Washington, D.C., January 10, 2000.

[3] "U.S. Department of Energy 30-Day Review Stockpile Stewardship Program," U.S. Department of Energy, Washington, D.C., November 23, 1999.

search and defense technology needs. OMEGA is the only facility that can demonstrate the scientific potential of direct drive to provide modest to high gain on the NIF. LLE is a major participant in NIF design and construction. At present, LLE is fabricating the large polarizers and transport mirrors for the NIF, and LLNL has also recently decided to have LLE coat, assemble, and test the NIF deformable mirrors. This decision will result in substantial cost saving on these items for the NIF. LLE is the lead laboratory working with DOE and the other participants to formulate the plan for the direct-drive ignition campaign on the NIF. In collaboration with the other ICF laboratories, LLE is also developing several advanced diagnostics required for NIF experiments.

An extensive collaborative program between LLNL, LANL, and LLE has provided data on basic physics, beam smoothing, and unstable hydrodynamics using available lasers. This collaboration on OMEGA includes both nuclear weapons physics experiments and ICF experiments. In fiscal year 2000, we expect 1,300 target shots on the OMEGA laser system that will be used for LLE's direct-drive program, National Laboratory ignition physics and stockpile stewardship programs, and the National Laser Users Facility (NLUF) program. During fiscal year 2001, the same number of laser shots are expected and funded in the Administration's request. This year LLE developed advanced diagnostics including a high-dynamic-range x-ray streak camera with high spatial resolution, hard x-ray diagnostics, and a neutron imaging system in collaboration with our colleagues at LANL, LLNL, and the French Commmissariat à L'Energie Atomique (CEA).

Both LANL and LLNL will continue to use OMEGA for ICF and SSP experiments for the foreseeable future. Because of the high interest and utility of the OMEGA facility to the weapons laboratories, DOE's budget request includes funds for extended operations on OMEGA for SSP experiments. With its lower per-shot cost compared to the NIF (several thousand dollars vs. more than $100,000), as well as the higher shot-repetition rate (one shot per hour vs. several shots per day), OMEGA will be a very important supporting facility for experiments and diagnostic development for the NIF after its completion.

THE LLE PROGRAM

The goal of the LLE direct-drive target physics program is to evaluate the performance of fuel capsules near ignition conditions. OMEGA is the first facility to attempt the fielding of high-fill-pressure cryogenic DT capsules, which forms the basis for the capsule design to be used in the NIF indirect-drive and direct-drive ignition demonstrations. In addition to providing data for the NIF, OMEGA experiments are required to validate the direct-drive configuration on the NIF that could result in two to three times higher fusion gains (gain >50) than those available with the baseline (indirect-drive) NIF design.

An important element of the direct-drive program on OMEGA is to demonstrate on-target irradiation uniformity of 98 percent to 99 percent. The realization of this goal this year will fulfill one of LLE's principal objectives for fiscal year 2000: We are implementing uniformity enhancements on all 60 OMEGA beams, including beam smoothing, and will achieve an on-target uniformity of greater than 99 percent rms. Planar target imprinting experiments are showing the expected reductions in the imprint of laser nonuniformities as a result of beam smoothing and plasma decoupling. Experiments to quantify the effect of internal target imperfections on target implosion physics have been completed, and good agreement between simulations and experiments was obtained. In fiscal year 2000 the improved pulse-shaping system achieved a contrast ratio of 100:1 with high reproducibility; this is required for the fiscal year 2001 cryogenic experiments.

As part of the theoretical and computational effort that is at the heart of understanding inertial fusion implosions, we have significantly extended our computational capability in the analysis of multidimensional effects. Initial three-dimensional simulations of hydrodynamic instabilities have been carried out and will be extended in fiscal year 2001. Multidimensional simulations will be conducted to determine the sensitivity of OMEGA and NIF target designs to irradiation nonuniformities and surface roughness during the coming year.

Cryogenic fueling and target experiments are necessary to demonstrate the success of the direct-drive option on the NIF. The OMEGA cryogenic system serves as an engineering test-bed to support NIF cryogenic development. In fiscal year 2000, we will complete the cryogenic target handling system and perform cryogenic DD implosion experiments. We have also implemented infrared layering and completed the first full characterization of a spherical target for target shots. In fiscal year 2001 we will perform high-density cryogenic implosions addressing critical issues for ignition experiments. A cryogenic capability, diagnostics development, and beam

smoothing are all required for the NIF. With respect to beam smoothing, in fiscal year 2001 LLE will complete the conceptual design of the beam-smoothing system for the NIF. LLE is the principal National facility engaged in developing these technologies. LLE's design and testing of two-dimensional beam-smoothing techniques and LLE's fabrication capabilities for the large polarizers, transport optics, and deformable mirrors for the NIF are essential to NIF's completion and success.

LLE provides education and training in the field of ICF and related areas for personnel with expertise in areas of critical National need, especially high-energy-density physics and laser research and development. One hundred thirty-three University of Rochester students have earned Ph.D. degrees in related laser physics programs at LLE since its founding. Sixty-three graduate students and 20 post-doctoral positions from other universities have been funded by NLUF grants. A total of 42 graduate students and 14 faculty members of the University of Rochester are involved in the unique research environment provided at LLE and represent many departments within the University. Beyond this, more than 50 undergraduate students receive research experience annually at LLE. Additionally, a high-school summer science program exposes 12 talented students each year to the research environment and encourages them to consider careers in science and engineering. Many LLE graduates have made important scientific contributions in National laboratories, universities, and industrial research centers.

REQUEST SUMMARY

The Administration (DOE) has requested $32,100,000 for the University of Rochester for SSP and ICF experiments on the OMEGA laser for fiscal year 2001. These monies will support operation of the OMEGA laser for the National laboratories, the LLE program, and continuation of the education and training programs at the Laboratory for Laser Energetics.

PREPARED STATEMENT OF THE NUCLEAR ENERGY INSTITUTE

On behalf of the Nuclear Energy Institute, I would like to commend you, Mr. Chairman and the members of this subcommittee for focusing your attention on the value of nuclear technology-related programs in the Energy Department and Nuclear Regulatory Commission budget proposals for fiscal year 2001.

The Nuclear Energy Institute (NEI) coordinates public policy for the U.S. nuclear industry. We represent 270 members with a broad spectrum of interests, including every U.S. utility that operates a nuclear power plant. NEI's membership also includes nuclear fuel cycle companies, suppliers, engineering and consulting firms, national research laboratories, manufacturers of radiopharmaceuticals, universities, labor unions and law firms.

Today, America's 103 nuclear power plants are the safest, most efficient and most reliable in the world. Nuclear energy is the largest source of emission-free electricity generation in the United States, and the industry last year reached unsurpassed levels for outstanding safety and performance.

Your continued support of nuclear research and development programs is essential to continue advances in nuclear medicine and other nuclear technologies beneficial to society, to guard against the impact of foreign supply disruptions to our energy security and to encourage growth of America's largest source of emission-free electricity. To capitalize on the many benefits of nuclear technologies, research and development of these technologies must be a priority in fiscal year 2001 appropriations legislation.

FEDERAL STORAGE & DISPOSAL OF USED NUCLEAR FUEL

The Federal Government's responsibility for deep geologic disposal of used nuclear fuel and the byproducts of defense-related activities are long established U.S. national policy. In 1982, the Nuclear Waste Policy Act established federal policy for developing such a facility. In 1987, Congress restricted the repository study to a site at Yucca Mountain, Nevada. DOE is committed to providing a decision on formal Yucca Mountain site recommendation to the President in the summer of 2001.

DOE's 1998 viability assessment and 1999 draft environmental impact statement (EIS) point to Yucca Mountain as a viable site for a permanent repository. The draft EIS says that the environmental impacts associated with the repository would be small, certainly less than keeping fuel at nuclear power plant sites that were not designed for long-term storage. It also predicts that peak radiation exposures over 10,000 years, due to the repository, would be less than 1 percent of naturally occur-

ring background radiation at that location, or less radiation than a transcontinental airplane trip.

DOE failed to meet its contractual and statutory obligations to accept and remove used nuclear fuel from national laboratories, nuclear power plants and defense facilities in 152 communities in 41 states beginning in 1998. This failure is a violation of the Nuclear Waste Policy Act of 1982 and also a breach of contracts between the Energy Department and electric utility companies.

Since 1982, American electricity consumers have committed $16.5 billion to the Nuclear Waste Fund, specifically to finance the central federal management of used nuclear fuel. Federal taxpayers have paid an additional $1.2 billion for disposal of waste from defense-related nuclear programs. The Nuclear Waste Fund has a balance of about $10 billion, which must be available for repository construction and operation. The director of DOE's Office of Civilian Radioactive Waste Management said recently that the budget for Yucca Mountain will increase during the repository construction phase to $1.3 billion in fiscal year 2005.

The nuclear power industry strongly supports the Department of Energy's fiscal year 2001 request for $437.5 million for the Civilian Radioactive Waste Management program, which includes continued scientific study at Yucca Mountain. Electricity consumers this year will pay approximately $700 million into the Nuclear Waste Fund. With full funding from Congress, DOE can be held accountable to forward a recommendation to the President on whether to proceed with building a repository at Yucca Mountain in 2001.

Further delay in opening a repository will result in increased costs to consumers for additional used fuel storage at nuclear power plants and could threaten our nation's ability to meet clean air goals.

NEI urges this committee to instruct DOE to provide Congress with detailed five-year projections—with subsequent six-month updates—of the estimated program costs for construction and operation of the federal used nuclear fuel program. DOE also should report monthly on progress toward meeting major repository milestones.

This committee has routinely examined the use of federal grants by Nevada state universities and counties to provide scientific oversight of the Yucca Mountain project. The industry supports funds for legitimate oversight purposes. However, the Nevada Nuclear Waste Project Office has been found to misspend funds. Until the state takes steps to reform this misspending, we believe grants should be restricted to universities and affected counties.

NRC's proposed Yucca Mountain regulations are consistent with sound science by relying on an all-pathways radiation standard. The overwhelming majority of scientists and public health experts believe that this is the appropriate manner to protect the public and the environment. The NRC should be allowed to regulate Yucca Mountain by using the most up to date methodologies available. To do otherwise would cost electric consumers and taxpayers billions of dollars without any meaningful return on public safety or environmental protection.

Although the repository program is the foundation of our national policy for used nuclear fuel disposal, the nuclear industry recognizes there can be value associated with potential future waste management technologies. Farsighted research and development programs allow our nation to continue to be the world leader in nuclear technologies. However, it is important to note those even technologies like transmutation—the conversion of used nuclear fuel into less toxic materials—still requires a geologic repository for disposal of the waste generated from the process.

NUCLEAR REGULATORY COMMISSION

The Commission is making progress to remedy the problem of user fees supporting NRC activities unrelated to licensee activities. The NRC's budget for fiscal year 2001 proposes that the NRC collect approximately 98 percent of its budget from user fees levied on licensees, excluding funding from the federal Nuclear Waste Fund. The budget further proposes that each fiscal year from 2001 through 2005, the proportion of the NRC budget derived from user fees will decrease by two percent each year.

The industry thanks the Committee for its continued oversight of the NRC and support for the NRC's new oversight process designed to make regulation of the industry more consistent and efficient. The recently completed pilot program for reactor regulation, which tested the new NRC safety-focused and results-oriented oversight process, was successful. The NRC is now preparing for full implementation this spring.

The industry also applauds the Committee for its concern that the NRC's licensing process for extending nuclear power plant operating licenses be completed on schedule. The NRC has responded to the Committee's direction. The first two elec-

tric utility companies seeking 20-year license extensions for nuclear plants are expecting to complete the NRC review process within about 24 months, shorter than the initially expected 36-month period. The industry expects future relicensing applications to be streamlined as the NRC applies lessons learned from the initial license renewal applications.

As priorities change, sound public management and budgeting policy require that the NRC reassess its allocation of resources and make appropriate budget and staffing changes. In that regard, this Committee asked for a comprehensive five-year plan as part of the NRC's fiscal year 2001 budget request. NRC's budget request for fiscal year 2001 was to outline anticipated agency staff and organizational changes. Industry urges the Committee to request a detailed explanation of the NRC's proposed fiscal year 2001 budget in the context of the comprehensive plan.

NUCLEAR ENERGY RESEARCH & DEVELOPMENT

Mr. Chairman, for the United States to remain the world leader in nuclear safety and technology, it is crucial that industry and government continue to invest in nuclear technology research and development.

U.S. electricity demand is expected to increase from 50 percent to 75 percent during the next decade, and we will need to maintain the 30 percent of electricity production from emission-free electricity sources, such as nuclear energy, solar, hydro and wind power. Of these, nuclear energy is the only expandable, large-scale electricity source that protects our air quality and meets the energy demands of a growing, modern economy.

The expansion of our domestic nuclear power program may ultimately prove to be one of our most strategic initiatives for mitigating the effects of air pollution and greenhouse gases. Without nuclear energy, it would be impossible for the United States to successfully reduce carbon dioxide and other emissions while expanding our economy. Today, improved efficiency and production at nuclear power plants is the single largest carbon reduction technology among industry participants in DOE's Voluntary Reporting Program. Nuclear energy accounts for almost half of the total carbon avoidance reported by all American industries combined.

In comparison to other electricity generating sources, nuclear energy is unequivocally the most economical federal research and development investment. In 1997, the Federal Government spent five cents on nuclear energy R&D for every kilowatt-hour of electricity generated at nuclear power plants. By comparison, the cost of natural gas R&D per kilowatt-hour, was 41 cents; for solar photovoltaics, $17,006; and for wind energy $4,769.

NEI urges the Committee to approve $45 million in fiscal year 2001 for the Nuclear Energy Research Initiative (NERI). The NERI program funds research and development at universities, national laboratories and industry to advance nuclear power technology, pave the way for the expanded use of nuclear energy and maintain U.S. leadership in nuclear plant technology and safety. In fiscal year 1999, NERI's review board awarded grants to 46 of 308 proposals submitted.

Although DOE requests $28 million for NERI in fiscal year 2001, mostly to continue ongoing projects, industry requests congressional approval of $45 million to complete existing projects as well as fund new projects in this highly promising program.

The nuclear industry strongly supports the new nuclear R&D initiative recommended by the White House: the Clean Energy Initiative or the International Nuclear Energy Research Initiative (NERI/I). NEI supports DOE's request for an additional $7 million to launch this cooperative international R&D program. NERI International will promote bilateral and multilateral research focused on advanced technologies to improve safe and efficient nuclear power plant operation and waste management. This program, funded jointly by all participating nations, provides the United States an opportunity to further leverage its nuclear energy R&D dollars.

The nuclear energy industry also encourages the Committee to authorize $10 million for the Nuclear Energy Plant Optimization (NEPO) program, which improves efficiency and reliability while maintaining outstanding safety at U.S. nuclear power plants. This public-private partnership is helping to facilitate America's economic growth and prosperity—and improving our nation's air quality

DOE's University Support Program enhances research and educational programs in nuclear science at colleges and universities. There are a dwindling number of college programs in nuclear engineering and science. To maintain our nation's position as the international leader in the nuclear field, it is vital that this trend be reversed and that our nation's best and brightest technical minds be attracted to the nuclear technologies fields. DOE has requested $12 million for this program, but the industry believes that Congress should allocate $20 million in fiscal year 2001 to fund

student recruitment, teaching facilities, fuel, reactors and other equipment, and instructors to educate a new generation of American nuclear specialists.

Nuclear Nonproliferation.—The industry strongly supports the Clinton Administration goal to reduce the threat of nuclear weapons arsenals around the world. NEI supports the disposal of excess weapons grade nuclear materials through the use of mixed-oxide fuel in reactors in the United States and Russia. An ongoing concern of industry is sufficient funding to ensure successful implementation of the program. NEI also urges the Committee to instruct DOE to provide Congress with detailed five-year projections of the expected program costs for construction and operation of plutonium disposition facilities.

Low-Dose Radiation Research.—The nuclear industry strongly supports continued funding for the DOE's low-dose radiation research program. This program will produce an enhanced understanding of low-dose radiation effects to assure that public and private resources are applied in a manner that protects public health and safety without imposing unacceptable risks or unreasonable costs on society.

Nuclear Research Facilities.—The nuclear industry is concerned with the declining number of nuclear research facilities. We urge the Committee to request that DOE provide it with a long-term plan for using existing nuclear research facilities, such as the Fast Flux Test Facility, as well as for development of new research facilities.

Uranium Facility Decontamination and Decommissioning.—The industry fully supports cleanup of the gaseous diffusion plants at Paducah, Ky., Portsmouth, Ohio; and Oak Ridge, Tenn. Each year, commercial nuclear power plants contribute more than $150 million to the government-managed uranium enrichment plant Decontamination and Decommissioning Fund (D & D Fund). NEI urges the Committee to assure that these monies are spent on D&D activities at these facilities. Other important environmental, safety and/or health activities at these facilities should be paid for out of the general fund. An important factor adding unnecessary costs to site cleanup is the overlapping and conflicting authority between EPA and DOE that hinders development of consistent federal radiation protection standards. We urge the Committee to support the Energy Department in finalizing its proposed decommissioning standards, consistent with those of the NRC, for the agency's sites. This would ensure safe, and timely standards for the agency's extensive environmental restoration program.

International Nuclear Safety Program & Nuclear Energy Agency.—NEI supports the funding requested for both DOE and NRC the international nuclear safety programs of both the DOE and NRC. They are programs aimed at the safe commercial use of nuclear energy.

Medical Isotopes.—The nuclear industry supports the Administration's program for the production of medical and research isotopes. However, NEI is concerned about DOE's dismantling of the calutrons at the Oak Ridge National Laboratory without first identifying new cost effective technology to supply the vital stable isotopes produced at that facility. We support continued funding for the Advanced Nuclear Medicine Initiative to fill the gap where other funding sources, such as the National Institute of Health, have been either unable or unwilling to provide support for radioisotope production.

PREPARED STATEMENT OF THE BUSINESS COUNCIL FOR SUSTAINABLE ENERGY

INTRODUCTION

The Business Council For Sustainable Energy is pleased to offer testimony to the Energy and Water Subcommittee of the House Appropriations Committee on the role for Government in promoting energy research and development, as it relates to renewable energy programs at the Department of Energy (DOE).

The Council was formed in 1992 and is comprised of businesses and industry trade associations that share a commitment to realize our nation's economic, environmental and national security goals through the rapid deployment of clean and efficient natural gas, energy efficiency, and renewable energy technologies. Our members range in size from Fortune 500 enterprises to small entrepreneurial companies, to national trade associations.

As recent events have brought to us as a nation once again, few activities have greater impact on our nation's economy, environment, and security than the production and use of energy. Our economic well-being depends on energy expenditures, which account for 7 to 8 percent of the nation's gross domestic product and a similar fraction of U.S. and world trade. Energy production and use also account for many environmental problems, such as smog, acid rain and the accumulation of greenhouse gases in the atmosphere. Our national security is increasingly linked to en-

ergy production and use, given our nation's increasing dependence on foreign oil sources, including those from the politically unstable Middle East. Expanded reliance on natural gas, energy efficiency and renewable energy are the three pillars of a more secure and sustainable energy strategy that will help strengthen the U.S. economy and clean up the environment.

FEDERAL PROGRAMS TO PROMOTE RENEWABLE ENERGY RESOURCES

The Council recognizes that suppliers and users of energy—not the Federal Government—ultimately will decide which energy sources meet our future needs. However, the Federal Government does play an important role in helping the private sector share the risk of investing in deployment of clean technologies that, while at or near economical viability, face obstacles to their wide market availability. The Council would like to describe the following programs which can strengthen the nation's portfolio of energy generation technologies.

WIND

World markets for utility-scale wind energy are growing at an unprecedented rate. Global installed generating capacity is estimated to have increased by more than 25 percent annually since 1990, and at a rate of 40 percent annually over the last five years. In 1999, more than 3,600 MW of new wind energy generating capacity were installed worldwide, bringing total installed capacity to the 13,400 MW range. This is the largest-ever worldwide single-year addition to wind generating capacity.

Domestically, from mid-1998 to mid-1999, some 925 megawatts (MW) of new generating capacity were installed in the U.S.—more than twice the amount added in 1985, the previous record year. In addition, nearly 200 MW of existing capacity were "repowered" with new turbines replacing older, less efficient ones. These additions bring total U.S. wind capacity to about 2,500 MW.

More Emphasis Is Needed on Small Wind Turbines: Homes consume more electricity than either businesses or industry: 35 percent of the 3.2 trillion kWh consumed in 1998. Distributed generation with small customer-sited power plants has great potential for reducing customer energy costs, promoting competition in the marketplace, and strengthening the nation's electrical supply network. Renewable energy technology for homes and farms include solar photovoltaics, concentrated solar thermal, and small wind turbines (up to 50 kW). The Council, therefore, supports the $6 million fiscal year 2001 Small Wind Turbine Initiative proposed by the American Wind Energy Association, which would provide more customer choice.

The Small Wind Turbine Initiative (SWTI) will reduce the costs of small wind systems for homes, farms, and small businesses by promoting deployment leading to higher production volumes, reducing market barriers, and improving the technology. SWTI aims to make small wind turbines cost effective for an estimated 6–10 million potential rural residential users in the 2010–2030 timeframe. Specific program goals for 2010 are:

—Energy costs below $0.06/kWh for 5 kW systems and below $0.05/kWh for 50 kW systems in Class 2 wind regimes
—100,000 systems installed (approx. 1,000 MW)
—At least 200 systems (2 MW) in all fifty states

Specific recommended program elements are as follows:

Partnerships for Technology Introduction (fiscal year 2001 $2 million).—This activity is a follow-on to the successful $1 million fiscal year 1999 Small Wind Field Verification Program and aims to engage a wider body of participants including federal agencies.

Advanced Home Turbine (fiscal year 2001 $1.5 million).—This new activity will initiate the cost-shared industry development of 2–3 advanced 1–8 kW wind turbines suitable for use on residences with as little as ¼ acre of land. These turbines must use space very efficiently and have extremely low environmental (noise and visual) impacts.

State and Local Policy Support (fiscal year 2001 $1 million).—This new activity will provide small wind technical and policy support for state utility restructuring initiatives and it will create a program to help address zoning issues.

International Clean Energy Initiative (fiscal year 2001 $1.5 million).—This new activity would try to accelerate the RD&D of small wind technology to developing countries and increase small wind's global energy contribution.

Funding for Cooperative Research and Testing will provide support for industry testing at the National Wind Technology Center (NWTC) in Rocky Flats, Colorado. This will allow for continued development of a U.S.-based certification capability for wind energy technologies. Ultimately, streamlined certification criteria will make it

easier for U.S. businesses to market and sell American-made wind turbine technologies in international markets.

The main focus of the applied research program is development of models to better understand aerodynamics (through wind tunnel tests), fatigue damage prediction and structural reliability capabilities. Modeling and code design work is underway at both the National Renewable Energy Laboratory (located in Golden, Colorado) and the Sandia National Laboratory (New Mexico).

The Council supports DOE's total request of $50.5 million for wind energy research and development in fiscal year 2001 to fund projects in turbine research ($14.5 million), cooperative research ($21 million) and applied research ($15 million). This level of funding is particularly important to continue developing next generation wind turbine technologies needed to keep the U.S. industry competitive in restructured domestic markets and in the fast growing, highly competitive international markets.

SOLAR ENERGY

The United States leads the world in the diverse portfolio of solar technologies: photovoltaics (PV) for manufacturing; thin films and energy services; solar thermal power in advanced concentrations (solar power towers, parabolic troughs, and dish-engines); and solar buildings in integrated systems and energy services delivery. However, our international competitors are positioning themselves to take our market share from vast, multibillion dollar world markets, as a result of strong support provided by their respective governments—especially in Japan and Germany—through a variety of aggressive programs. Maintaining our lead requires determined U.S. Government action, not only to support international activities but also to secure a position in growing domestic markets.

Solar technologies available today include PV, solar water and pool heating, solar process heating, and solar thermal power technologies. Faster integration of solar energy systems in both supply- and demand-side applications in our domestic economy, combined with support for increased exports of U.S. solar technologies, will have the parallel benefits of creating thousands of new high-technology manufacturing jobs while improving our environment. The Council supports the trend toward market-driven, industry cost-shared programs designed to leverage federal dollars with private-sector participation to enhance private-sector understanding and use of these technologies.

Improving conversion efficiency of solar panels and reducing manufacturing costs will play a key role in sustaining U.S. dominance in the area of PV. The Council supports DOE's photovoltaic system program. PV programs are among the best leveraged (the PV COMPACT program leverages $4 and $5 for every federal dollar expended) in DOE. Our two most formidable competitors, Japan and Germany, outspend DOE's investment in PV research and development and PV commercialization programs. While U.S. industry is exporting a significant amount of its products to these countries, most expect this demand to rapidly diminish as in-country manufacturing capabilities are increased. As an example, the Japanese Ministry of International Trade and Industry has a domestic deployment goal of 400 megawatts of PV in 2000 and its manufacturers are responding to the challenge.

Japanese manufacturers are expected to expand their annual production capacity four-fold over the next three years. Not only will this expansion allow the Japanese industry to meet much of its domestic demand for PV; it will enable Japan to overtake the U.S. in terms of global market share. The Council continues to support the Administration's Million Solar Roofs (MSR) Initiative.

The Council supports DOE cost-shared initiatives in R&D (thin-films and other advanced materials, manufacturing and other solar initiatives which address these issues). Equally important is the concept of building integrated PV programs where manufacturers, systems integrators and utilities work together to reduce the cost of PV generated electricity. The Council also supports the Department's PV COMPACT program. It is a collaborative effort involving more than 80 electric utilities (representing over half the electricity produced in the U.S.) and other interested organizations to garner the economic, commercial, and environmental benefits of PV technologies.

PV and other solar technologies offer the U.S. environmentally benign, cost-effective energy supply options in a variety of market applications. The Council is highly supportive of PV programs, and requests $102 million for DOE programs. The market viability of these technologies is demonstrated in growing private sector interest in developing new manufacturing facilities related to solar industries. In the area of PV production alone, the last four years have witnessed six U.S. companies announce plans to construct new PV plants. This activity is a unique example of DOE

funding encouraging significant private-sector investment that creates new jobs. The Council strongly urges Congress to continue supporting public/private partnerships that help ensure that U.S. companies can compete effectively in rapidly emerging world renewable energy markets.

The Council also supports PV programs within DOE's Office of Energy Efficiency and Renewable Energy, specifically DOE's Solar Thermal Buildings program, a research and development program focusing on materials and components for solar water and space heating technologies for building applications. Based at the National Renewable Energy Laboratory and the Florida Solar Energy Center, the program also has a strong technology standard and certification component. Activities in fiscal year 2001 should include the completion of collaborative projects with utilities and builders to assess their impact on improving solar water heating technology and the completion of a cooperative research and development agreement with the Salt River Agricultural Improvement and Power District to develop a solar water heater that could provide hot water at a cost of 6 to 7 cents per kilowatt-hour.

The Council supports the Solar Thermal Electric and Process Heat programs, an R&D program on materials and components with a heavily cost-shared technology validation component. Over the past six years, the primary program focus has been in collaboration with industry to develop advanced solar thermal electric technologies to the point of commercial readiness.

The Council also supports concentrated solar power, and solar buildings programs, specifically seeking $20.5 million for federal concentrated solar power research programs, and $5.5 million for solar buildings.

DISTRIBUTED POWER

Customers throughout the nation are seeking technologies that are scaled to a competitive market and that provide the quality and reliability assurances needed by an economy increasingly influenced by electronic commerce. Accordingly, power providers are developing state of the art technologies aimed at providing customers with the cleanest, most reliable, and cheapest power possible. This market cannot develop without the accumulation of real-world operating experience, but the uncertainties of the unfolding marketplace are inhibiting such deployment. Last year the Congress added funding for a $3 million pilot effort to demonstrate these technologies, and that program was greatly oversubscribed by industry. DOE has requested the continuation of this program, but BCSE strongly supports increasing it to $9 million. Further research is also needed in order to develop cost-effective interconnection technologies and standards which would enable smaller distributed generation products to connect and operate safely with the electric grid. DOE has requested $250,000, but BCSE strongly feels this should be increased to $2.5 million.

RENEWABLE ENERGY PRODUCTION INCENTIVE

As part of the Energy Policy Act of 1992 (Sec. 1212), Congress passed the Renewable Energy Production Incentive (REPI) to encourage the development of renewable energy projects in tax-exempt municipal utilities. This program has been successful in helping municipal utilities such as the Sacramento Municipal Utility District develops wind and solar generating facilities. We believe the Administration's request is insufficient to meet the requirements of this program, and request the Committee increase to $8 million the funding for the REPI.

GEOTHERMAL ENERGY

The Council supports federal programs directed towards taking advantage of geothermal resources. U.S. geothermal resources already displace 22 million tons of CO_2 annually. Internationally, nearly 20,000 megawatts of electrical and thermal energy are recovered, with the potential to quadruple that harvest over the next 20–30 years. The Council affirms a budget increase to $27 million in geothermal funding in fiscal year 2001.

INTERNATIONAL ACTIVITIES

Finally, the Council would like to offer its support of federal programs designed to help open important international markets for renewable energy technologies. Competition in rapidly growing developing country markets is intense; U.S. renewables manufacturers face the dual obstacles of competition from conventional energy sources and foreign renewables manufacturers buoyed by government assistance.

Our participation in international markets is more critical than ever. Growth in developing nations will take their energy use levels above that of the industrialized nations within two decades, and after their expenditure of $4 to $5 trillion. Tradi-

tionally, environmentally friendly and efficient technologies are not the first choice of decision-makers in these markets. With encouragement and bureaucratic streamlining, however, U.S. clean energy exports could double in less that five years, resulting in up to $5 billion in export revenues and 100,000 new American jobs. Global benefits include reducing greenhouse gas and sulfur particulate emissions by bypassing reliance on traditional energy sources, and providing for the energy needs of those now without electricity.

The Council is extremely supportive of the fiscal year 2001 funding for international energy programs like the International Clean Energy Initiative, and urges that funding for this and or similar programs not come at the expense of existing research, development and deployment programs. Beyond the benefit to U.S. exports, these technologies can help ensure international economic and political stability by meeting the profound infrastructure needs of these countries.

CONCLUSION

Promoting research, development and validation of emerging renewable energy and distributed power technologies will result in the near-term creation of thousands of new American jobs, stronger economies here and abroad, enhanced export opportunities for domestic manufacturers, and a cleaner environment. DOE's budget request continues federal emphasis on developing low- and non-polluting energy technologies and services as a means of achieving these goals. It utilizes cost-shared collaboratives with industry to leverage limited federal funds in recognition that cooperation with industry is vital for addressing market imperfections impeding the widespread use of renewables.

The Council strongly supports this approach, and urges Congress to continue its support of federal research, development and validation programs for renewable and distributed energy technologies and programs. By adopting a robust budget for development of these technologies, Congress can demonstrate its genuine commitment to the U.S. economy's over-reliance on limited energy options.

PREPARED STATEMENT OF THE AMERICAN CHEMICAL SOCIETY

The American Chemical Society (ACS) would like to thank Chairman Pete Domenici and Senator Harry Reid for the opportunity to submit testimony for the record on the Energy and Water Development Appropriations bill for fiscal year 2001.

As you may know, ACS is a non-profit scientific and educational organization, chartered by Congress, representing 161,000 individual chemical scientists and engineers. The world's largest scientific society, ACS advances the chemical enterprise, increases public understanding of chemistry, and brings its expertise to bear on state and national matters. ACS firmly believes that no investment the government makes generates a higher rate of return for the economy than research and development (R&D). In fact, economic experts maintain that today's unprecedented economic growth would not have been realized but for the substantial research investments by the public and private sectors over the past few decades. Looking ahead, the American Chemical Society (ACS) is concerned that constant dollar declines in federal support for basic research over the past decade, particularly in the physical sciences, have weakened the roots of innovation in all fields and put future economic growth at risk. In order to sustain our technological leadership and living standards, increased funding for basic research should be a top priority for use of the non-Social Security budget surpluses. As a framework for increases in R&D, ACS supports doubling federal spending on research within a decade, as well as balanced funding among different areas of science.

U.S. DEPARTMENT OF ENERGY BUDGET RECOMMENDATIONS

ACS strongly supports the 12-percent increase requested for the Department of Energy's (DOE) Office of Science (SC). DOE is the nation's largest supporter of research in the physical sciences and the largest supporter of major scientific user facilities. Most of this support is provided through the Office of Science. SC plays a central federal role in supporting long-term, peer-reviewed basic research across all scientific disciplines, both in universities and national laboratories, which strengthens our knowledge base and the training of the next generation of scientists. The research supported by SC addresses, on a fundamental scientific level, one of the world's most pressing problems: how to meet growing demands for energy while protecting the environment and ensuring economic growth. Whether the challenge is cleaner and more efficient fossil fuels, advancing energy efficiency and renewable

energy, or cleaner and affordable power, SC provides the scientific framework necessary for progress on DOE's energy and environmental objectives.

Nanoscale Science and Engineering.—The Society strongly supports SC's important role in the interagency nanotechnology initiative. The Office of Science has been a leader in the development of nanoscience since the early 1980s. The ability to manipulate and move matter at the atomic and molecular level and understand and control the building blocks of all physical things can bring revolutionary improvements in medicine, electronics, and advanced materials for manufacturing, defense, and environmental applications. SC's substantial investment in university-based research and in major scientific user facilities will play a unique and important role in advancing the chemistry, materials, biology, and engineering expertise needed to invigorate this cutting-edge research.

Basic Energy Sciences

Within SC, ACS supports the budget request of $1 billion for the Basic Energy Sciences (BES) program, which would increase funding by $236 million in fiscal year 2001. The most diverse research program within DOE, BES funds an array of long-term basic research that advances the technology needed to improve energy production and use and environmental progress. Although much of the requested increase is slated for the Spallation Neutron Source, increases in core, peer-reviewed research in chemistry, materials, and other areas are essential to further departmental missions and maintain progress in the physical sciences. BES research, for example, has fostered improvements in battery storage, superconducting materials, and the understanding of combustion at a fundamental level. Increased investments will also support much of DOE's role in the nanotechnology initiative and sustain the operation of many of the nation's most sophisticated research facilities, which offer researchers world-class capabilities to carry out complex experiments that could not be done in other laboratories.

Biological and Environmental Research

ACS supports a 7-percent increase for the Biological and Environmental Research (BER) program in fiscal year 2001. The Society is concerned that the $445 million request for BER, an increase of less than 3 percent, is inadequate to meet the critical demands of this quality program. BER advances fundamental understanding in fields such as waste processing, bioremediation, and atmospheric chemistry to better understand potential long-term health and environmental effects of energy production and use. Progress in these fields is also needed to develop and advance new, effective, and efficient processes for the remediation and restoration of weapons production sites. The program advances understanding of the basic chemical, physical, and biological processes of the Earth's atmosphere, land, and oceans, and how these processes may be affected by energy production and use, primarily the emission of carbon dioxide from fossil fuel combustion. Such research includes critical efforts to capture, measure, and reduce carbon and other greenhouse gases and the consequences of global climate change. ACS also supports a strong role for BER in federal efforts to understand and address global climate change, including the Climate Change Technology Initiative and the U.S. Global Change Research Program.

Strong funding for DOE's Office of Science is a priority for the Society. Investments in basic research within BES and BER should be increased in fiscal year 2001 because both programs fund quality, peer-reviewed research projects that are investments in the true sense of the word.

ACS also supports DOE's "Industries of the Future" program within the Office of Industrial Technologies (OIT). The program advances innovative technologies through cooperative R&D with the nation's most energy-intensive industries, including the chemical industry. OIT works with these industries to develop both a long-range vision of their future competitiveness and a technology roadmap to identify the R&D and other investments needed to achieve that vision.

In the past 7 years, 10 scientists have won Nobel Prizes in Chemistry or Physics for their SC-supported research. ACS believes that SC research programs warrant increased investment to ensure they can continue to support cutting-edge fundamental research across disciplines, which provides the scientific foundation needed to support DOE's mission in energy, environment, and national defense.

PREPARED STATEMENT OF THE BIOMASS ENERGY RESEARCH ASSOCIATION

This testimony pertains to the fiscal year 2001 (fiscal year 2001) appropriation for mission-oriented, biomass research, development, and deployment (RD&D) supported by DOE's Office of Energy Efficiency and Renewable Energy (EERE). The Biomass Energy Research Association (BERA) is a non-profit association

headquartered in Washington, DC. BERA was founded in 1982 by researchers and private organizations that are conducting biofuels research. Our objectives are to promote education and research on renewable biomass energy and waste-to-energy systems that can be economically utilized by the public, and to serve as a source of information on policies and programs. BERA does not accept federal funding for its efforts.

I would like to thank you, Mr. Chairman, on behalf of BERA's members for the opportunity to present our position on the federal funding of mission-oriented biomass RD&D. Continued support is essential to provide the stimulus to develop environmentally clean, indigenous energy resources that can displace fossil fuels, stimulate regional and national economic development and employment, reduce our dependence on imported oil, improve our energy security, and help to eliminate adverse climate and environmental changes.

I have examined the details of DOE's request for biomass funding in fiscal year 2001 for EERE, and would like to offer a few comments about our Board's concerns before presenting BERA's recommendations. DOE continues to emphasize scale-up projects, the budgets for which are large and which adversely impact the research budgets. DOE has therefore been required to terminate research in several microbial and thermochemical conversion areas. We feel that a balanced research program should be sustained and protected, so BERA continues to recommend both a diversified portfolio of research and an appropriate amount of funding for scale-up without diminishing either EERE's research or scale-up programs. Also, DOE's basic research on biomass energy outside of EERE by the Office of Science ($41.0 million requested for fiscal year 2001), which supports academic research, complements EERE's biomass RD&D. Other mission-oriented biomass RD&D programs are funded through EERE's Office of Industrial Technologies (OIT) under the Interior and Related Agencies Bill. All of these projects and programs should be internally coordinated and jointly managed at DOE Headquarters. BERA's recommendations for OIT's mission-oriented biomass programs total $43.826 million and are presented in a separate BERA statement for the Interior and Related Agencies Bill.

DOE's request for EERE's biomass funding under the Energy and Water Bill includes details that have usually not been presented in the past. We commend EERE for updating their biomass RD&D plan so that it is now reasonably clear which projects have been completed, terminated, or are new starts. Specifically, BERA recommends that $117 million be appropriated for biomass RD&D under the Energy and Water Bill in fiscal year 2001.

—A total of $70.5 million for research and $46.5 million for industry cost-shared scale-up.
—$34 million for research and $22.5 million for industry cost-shared scale-up projects for Power.
—$30.5 million for research and $24 million for industry cost-shared scale-up projects for Transportation.
—$6 million for biomass-based hydrogen research.

BERA also strongly recommends that the provisions of both the Bioenergy Initiative enacted by Congress for fiscal year 2000 and the Executive Order "Developing and Promoting Biobased Products and Bioenergy" be incorporated into the overall federal biomass research program. This will enhance the value of the federal expenditures on biomass RD&D to the country in many ways.

ALLOCATION OF APPROPRIATION RECOMMENDED BY BERA

BERA recommends that the appropriation for fiscal year 2001 be allocated as shown in the accompanying table. BERA's recommendations are generally listed in the same order as DOE's request for fiscal year 2001, except we include several research areas that are either new or that BERA recommends be restored to sustain a balanced program of research and scale-up. Note that the recommended budget for each scale-up category does not include industry cost-sharing, which is required to be a minimum of 50 percent of the total budget.

Office of Energy Efficiency and Renewable Energy—program area	Recommended budget	
	For research	For scale-up
Power Systems:		
Thermochemical Conversion:		
Cofiring/Ash Deposition	$3,000,000	.....
Advanced Combustion	4,000,000	.....
Advanced Gasification	2,000,000	.....

Office of Energy Efficiency and Renewable Energy—program area	Recommended budget	
	For research	For scale-up
Advanced Pyrolysis	3,000,000	.....
Advanced Stationary Fuel Cells	2,000,000	.....
Advanced Process Fuels	3,000,000	.....
Improved Emissions Control	4,000,000	.....
Wastewater Treatment	2,000,000	.....
Hot Gas Clean-Up	2,000,000	.....
Microbial Conversion: Advanced Anaerobic Digestion	2,000,000	.....
Systems Development:		
Biomass/Coal Cofiring	.....	$3,500,000
Integrated Field Scale-Up	.....	7,000,000
Vermont Gasifier	.....	4,000,000
Small Modular Systems	2,500,000	3,000,000
Feedstock Production	2,000,000	4,000,000
Regional Biomass Energy Program [1]	2,500,000	1,000,000
Subtotal	34,000,000	22,500,000
Transportation:		
Fermentation Ethanol:		
Advanced Organisms	2,000,000	.....
Advanced Cellulase	8,500,000	.....
Advanced Pretreatment	2,000,000	.....
NREL Pretreatment Pilot Reactor	.....	3,000,000
NREL Fermentation Pilot Plant	.....	5,000,000
Commercial Ethanol Plants by Company and Location:		
Arkenol, Rio Linda, CA [2 3]	.....	.....
BCI International, Jennings, LA [2 4]	.....	.....
BCI International, Gridley, CA [5]	.....	4,000,000
Masada Resources, Orange County, NY [2 6]	.....	.....
Sealaska Corp., Southeast AK [7]	.....	2,000,000
Corn Stalk Feedstock [8]	.....	5,000,000
1Advanced Mobile Fuel Cells	3,000,000	.....
Renewable Diesel	1,000,000	.....
Feedstock Production	2,000,000	4,000,000
Thermochemical Conversion:		
Ethanol	3,000,000	.....
Mixed Alcohols	3,000,000	.....
Other Oxygenates from Biomass	3,000,000	.....
Regional Biomass Energy Program [1]	3,000,000	1,000,000
Subtotal	30,500,000	24,000,000
Hydrogen Research: [9]		
Thermal Processes (Reforming)	3,000,000	.....
Photolytic Processes (Algae)	3,000,000	.....
Subtotal	6,000,000	.....
Total	70,500,000	46,500,000
Grand Total	117,000,000	

[1] BERA strongly recommends that for future funding requests, the Regional Biomass Energy Program be treated as a line item.
[2] DOE contribution to plant costs completed.
[3] Rice straw, concentrated acid.
[4] Bagasse, dilute acid.
[5] Rice straw, dilute acid.
[6] Refuse-derived fuel, concentrated acid.

[7] Waste softwoods.
[9] For plant located in Midwest.
[9] BERA's recommendations pertain only to the biomass-based portion of Hydrogen Research.

PROGRAM INTEGRATION, COORDINATION, AND MANAGEMENT

For several years, BERA has urged that all of the biomass-related research funded by DOE should be internally coordinated and jointly managed at DOE headquarters. The program managers at DOE Headquarters should be heavily involved in this activity. Multi-agency agreements to expand the coordination of biomass energy research programs between two or more federal agencies do not seem to have been too effective in the past. Implementation of the Bioenergy Initiative enacted by Congress for fiscal year 2000 to identify each federal agency that provides funding related to producing biomass energy, each agency's programs, and the expenditures by each agency, coupled with President Clinton's Executive Order 13134 issued on August 12, 1999, "Developing and Promoting Biobased Products and Bioenergy," should make it possible to extend the coordination of all of these programs through a National Coordination Office to all federal agencies involved in biomass energy development, as proposed in the Executive Order.

BERA strongly recommends that these initiatives be continued and incorporated into the overall federal biomass RD&D program. In fiscal year 2001, it is especially important that the biomass research of DOE and the U.S. Department of Agriculture be closely coordinated. If the initiatives are fully implemented, the value of the federal expenditures on biomass research to the country will be enhanced in many different ways.

BERA RECOMMENDS $70.5 MILLION FOR RESEARCH AND $46.5 MILLION FOR INDUSTRY COST-SHARED, SCALE-UP PROJECTS FOR FISCAL YEAR 2001

BERA's recommendations consist of a balanced program of mission-oriented RD&D on feedstock production and conversion research and technology transfer to the private sector. Advanced power generation technologies, alternative liquid transportation fuels, and innovative hydrogen-from-biomass processes are emphasized.

In addition, BERA strongly urges that at least 50 percent of the federal funds for biomass research, excluding the funds for scale-up projects, are used to sustain a national biomass science and technology base via subcontractors outside DOE's national laboratories. While it is desirable for the national laboratories to coordinate this research, increased support for U.S. scientists and engineers in industry, academe, and research institutes that are unable to fund biomass research will encourage commercialization of emerging technologies and serious consideration of new ideas. It will also help to expand the professional development and expertise of diverse researchers committed to the advancement of biomass technologies.

BERA's specific recommendations for research, the industry cost-shared scale-up projects, and the dollar allocations are listed in the table (page 2). Additional commentary on each program area is presented below in the same order as listed in the table.

POWER SYSTEMS

Thermochemical Conversion.—Currently, there is over 8,000 MW of electric power capacity fueled by biomass in the United States. Municipal solid wastes, forest and wood processing residues and pulping liquors are the primary fuels. Continued research to develop advanced biomass combustion, gasification, and pyrolysis methods could have environmental and economic benefits that can lead to significant growth in biomass power generation. Much of this research has been phased out by DOE. Research (not scale-up) should be initiated or re-stored with the goal of developing the next generation of thermochemical biomass conversion processes for power generation. Stationary, integrated biomass gasifier-fuel cell systems should be developed as potential, high-efficiency power generation systems. New fuel cells that can tolerate the sulfur levels found in certain biomass-derived fuel gases without sacrificing system affordability and the testing of integrated advanced fuel cell systems should be included in this work. Research is also recommended to develop advanced processed fuels and systems for handling these fuels. These fuels are, for example, pelletized wood wastes and densified solid waste biomass-coal fines that are easily handled and fed to existing combustion devices. In addition to these research programs, priority should also be given to the development of innovative enabling technologies consisting of advanced emission control systems, improved ash disposal methods and new ash uses, low-cost, hot gas clean-up methods, and advanced materials that eliminate corrosion and erosion problems for thermochemical reactors and

turbines. The status of these technologies is far from what is needed, yet they are essential for practical, low-cost thermochemical conversion of biomass.

Microbial Conversion.—Microbiological gasification by anaerobic digestion is unique in that it produces methane directly, the major component in natural gas, as a primary product from a full range of virgin and waste biomass feedstocks. However, DOE has terminated most of the research needed to develop advanced systems that yield low-cost methane by reducing capital and operating costs. This research can lead to the alleviation of numerous environmental problems encountered during waste treatment and disposal, and should be restored.

Systems Development.—The scale-up of biomass gasification for medium-Btu gas and power in Vermont continued in fiscal year 2000. This project should be funded in fiscal year 2001 to allow completion of the gasification test runs and the testing of an advanced turbine system for the generation of 8–12 MW from wood. The development of hot gas clean-up technology, which was terminated before completion at another gasification project site, should be restored. This work should be continued until the technology is perfected. The integrated biomass production-power generation projects chosen by DOE for scale-up in New York (willow-coal cofiring), and Iowa (switchgrass-coal cofiring) should be continued as well as DOE's initiative to expand biomass-coal cofiring at additional sites, such as the wood waste-coal project at NIPSCO. Plans should also be made to fund scale-up of the Whole Tree Energy system as part of this effort. Research on the development of advanced biomass-coal cofiring systems and small modular direct biomass combustion turbines should be sustained to develop advanced designs for small modular systems, and advanced combined cycle systems that can supply cogenerated power.

Feedstock Production.—Land-based biomass grown as energy crops can supply large amounts of fossil fuel substitutes. Considerable progress has been made on the efficient production of short-rotation woody crops, and on the growth of herbaceous species. In addition, research on tissue culture techniques and the application of genetic engineering methods to low-cost energy crop production have shown promise. This research should be continued to develop advanced biomass production methods that can meet the anticipated feedstock demand. BERA also recommends that industry cost-shared, scale-up projects chosen by DOE of at least 1,000 acres in size be continued to develop large-scale, commercial energy plantations in which dedicated energy crops are grown and harvested for use as biomass resources. These projects should be strategically located and should utilize the advanced biomass production methods already developed in the research programs. Successful completion of this work will help biomass energy attain its potential by providing the data and information needed to design, construct, and operate new biomass production systems that can supply low-cost feedstock for conversion to electric power and transportation fuels. It is recommended that the appropriation for this activity be shared between EERE's Power Systems and Transportation Fuels programs.

Regional Biomass Energy Program.—See Transportation.

TRANSPORTATION

Fermentation Ethanol.—Research on the conversion of low-cost lignocellulosics to fermentation ethanol should be continued. The targets should include the development of genetically engineered organisms that can ferment all the C_5/C_6 sugars in biomass at the same time, low-cost cellulase production for simultaneous saccharification-fermentation, and advanced pretreatment of low-cost biomass feedstocks. This research should focus on the development of accurate bases from which advanced technologies can be scaled-up for commercial use with confidence, and on advanced technologies that significantly reduce processing costs. NREL's fermentation pilot plant and counter-current pretreatment pilot plant reactor installed in fiscal year 2000 should be operated on a cost-shared basis with DOE's industrial partners to support the commercial ethanol plant program

Commercial Ethanol Plants.—DOE's contributions to the costs of three fermentation ethanol plants (Rio Linda, CA; Jennings, LA; Orange County, NY) have been completed, and further contributions to the costs of two other fermentation ethanol plants (Gridley, CA; Southeast AK) are planned in fiscal year 2001, as shown in the table on page 2. Another plant using corn stalk feedstocks is planned for the Midwest in fiscal year 2001. The processes used are conventional and advanced technologies. BERA recommends that the existing projects should be completed, the results analyzed, and the technologies confirmed before other scale-up projects are started.

Advanced Mobile Fuel Cells.—Research should be initiated to design and perfect vehicular fuel cell systems equipped with on-board reforming units for biomass and

biomass-based liquids. The goal should be the production of low-cost fuel gases suitable for direct use as motor fuels and as fuels for fuel cells.

Renewable Diesel.—This research, formerly called Biodiesel, should be focused on methods of reducing production costs of renewable diesel fuels and biomass-based diesel fuel additives. DOE plans to evaluate waste grease streams as one approach to this objective. BERA recommends that most of this effort focus on increasing natural triglyceride yields, which are the main barrier to improved economics for biodiesel, and to the evaluation of other potential biomass feedstocks such as tall oils that can be directly transformed into high-quality, renewable diesel fuels having high cetane numbers by hydroconversion.

Feedstock Production.—See Power Systems.

Thermochemical Conversion.—Almost all of DOE's RD&D on liquid transportation fuels from biomass emphasizes fermentation ethanol. Thermochemical conversion research should be started that targets liquid motor fuel production at costs competitive with those of gasolines and diesel fuels in the near-to-mid term. Research on the thermochemical conversion of low-grade biomass for use as motor fuels shows great promise. Preliminary research on the non-microbial conversion of synthesis gas illustrates the potential of producing ethanol, mixed alcohols and oxygenates, ethers, and coproducts at costs that are less than the corresponding costs of liquids produced by microbial and fermentation processes. Some analysts project that fuel ethanol from low-grade biomass by thermochemical processes may be able to attain production costs in the same range as methanol from natural gas feedstocks. Each of these areas should be added to DOE's program.

Regional Biomass Energy Program.—The Regional Biomass Energy Program (RBEP), established by Congress in 1983, is the information and outreach arm of DOE's biomass energy RD&D programs. The RBEP develops and disseminates information and provides technical and financial assistance to biomass energy developers and entrepreneurs. The RBEP also gathers information in the field to keep DOE informed of current situations and opportunities. Administratively housed in EERE's Office of Fuels Development, and partially funded by the EERE's Office of Biomass Power Systems, the RBEP consists of five regional administrations to account for the regional variations in biomass resource capabilities and energy needs. Within the national goals of DOE and regional constraints, the RBEP develops regional goals and strategies using stakeholder participants, and conducts cost-shared activities to develop state bioenergy programs and a strong biomass energy industry. These activities include assisting with technology demonstrations in the field, identifying and addressing institutional barriers, performing resource assessments, and removing or reducing market barriers. Historically, the RBEP has been effective in increasing national biomass energy consumption, reducing the country's dependence on fossil fuels, enhancing the environment, and creating jobs and other economic development, particularly in rural areas. Over its 17-year existence, the RBEP has developed working relationships with virtually all levels of government, academe, and the private sector. The RBEP's work is conducted in partnerships that provide from $2 to $4 in cost sharing for every $1 in RBEP funds. In fiscal year 2001, the role of the RBEP will become even more important by providing information and outreach support to DOE's power, transportation fuels, and chemicals-from-biomass programs and the initiatives described in the previous section. BERA recommends that the appropriation for the RBEP be shared between EERE's Power Systems and Transportation Fuels programs. For future funding requests, BERA strongly recommends that the RBEP be treated as a line item.

HYDROGEN RESEARCH

Research on the thermal reforming of biomass in a supercritical fluid reactor and in an advanced-design plasma reformer, and on water splitting with algae, which is the equivalent of photolysis, should be continued. Detailed study of each of these conversion techniques may lead to practical processes for the low-cost production of hydrogen.

PREPARED STATEMENT OF THE AMERICAN PUBLIC POWER ASSOCIATION

The American Public Power Association (APPA) is the national service organization representing the interests of over 2,000 municipal and other state and locally owned utilities throughout the United States. Collectively, public power utilities deliver electric energy to one of every seven U.S. electric consumers (about 45 million people), serving some of the nation's largest cities. The majority of APPA's member systems are located in small and medium-sized communities in every state except Hawaii.

We appreciate the opportunity to submit this testimony outlining our fiscal year 2001 appropriations priorities within your Subcommittee's jurisdiction.

RENEWABLE ENERGY PROGRAMS

APPA believes it is important to continue development and commercialization of clean, renewable energy resources as we face the prospect of increased competition in the electricity marketplace. Two of the most significant barriers to greater renewable energy use are cost and lack of demonstrated experience. Because of the requirement to supply electricity to customers on demand, with high reliability at a reasonable cost, electric utilities often are conservative when evaluating new technologies. Evolving deregulation, coupled with unstable fuel prices, now adds a further challenge to greater adoption of relatively unproved renewable technologies.

We applaud the Administration's emphasis on DOE energy efficiency and renewable programs and ask that this Subcommittee work to ensure that renewable energy remains part of the full range of resource options available to our nation's electric utilities. APPA supports a minimum of $409 million for Solar and Renewable Resources Technologies in fiscal year 2001. This funding level will go a long way in furthering the call for significant expansion of renewable energy R&D programs in order to meet the energy challenges and opportunities of the 21st century.

RENEWABLE ENERGY PRODUCTION INCENTIVE PROGRAM (REPI)

APPA urges this subcommittee's continued support for the Renewable Energy Production Incentive Program (REPI), the renewable energy incentive program authorized by the Energy Policy Act of 1992, at a level sufficient to make full incentive payments to all eligible facilities. In recognition of budget constraints, however, we support and urge the Committee to support the Administration request of $4 million for fiscal year 2001.

The REPI program increases in importance as new air quality regulations are imposed and renewable energy mandates considered. Public power systems will be at a disadvantage under the currently structured REPI if renewable portfolio standards are included in electricity restructuring proposals. Unlike the certainty of the tax credits and incentives available to private entities, REPI funding is erratic and insufficient to offset the higher costs of using alternative energy resources. REPI permits DOE to make direct payments to publicly owned electric utilities at the rate of up to 1.5 cents/kWh of electricity generated from solar, wind, certain geothermal and biomass electric projects. Because projects of this nature often require a long lead-time for planning and construction, it is imperative that stable and predictable funding be provided. APPA urges this subcommittee's support of REPI at $4 million.

STORAGE FOR HIGH-LEVEL NUCLEAR WASTE

We support the Administration's budget request of $437.5 million for storage of high-level nuclear waster an increase of $85 million over fiscal year 2000 funding. These funds will enable DOE to continue preparations to accept spent fuel as well as to continue scientific studies at Yucca Mountain assessing the viability of the site.

ADVANCED HYDROPOWER TURBINE PROGRAM

The Advanced Hydropower Turbine Program is a joint industry/government cost-share effort to develop a new, improved hydroelectric turbine superior in its ability to protect fish and aquatic habitat and operate efficiently over a wide range of flow levels. We support funding this program at $5 million in fiscal year 2001

During the next 15 years, 220 hydroelectric projects will seek new licenses from the Federal Energy Regulatory Commission (FERC). Publicly owned projects constitute 50 percent of the total capacity that will be up for renewal. Many of these projects were originally licensed over 50 years ago. Newly imposed licensing conditions can cost hydro project owners 10 to 15 percent of power generation. A new, improved turbine could help assure any environmental conditions imposed at relicensing in the form of new conditioning, fish passages or reduced flows are not accomplished at the expense of energy production. This is particularly important due to the increasingly competitive electric market in which utilities operate today. Flow levels will affect the economics of each of these projects and many will be unable to compete if the current trend toward flow reductions continues.

FEDERAL POWER MARKETING ADMINISTRATIONS (PMAS)

APPA urges the Committee to support funding of $89 million for purchase power and wheeling (PPW). APPA has consistently supported increased efficiency in PMA

operations. However, Congress must recognize that federal power sales revenues cover all PMA operating expenses plus all Corps of Engineers and Bureau of Reclamation operations, maintenance, replacement and rehabilitation expenses for hydropower and repayment of the federal investment in the construction of the projects plus interest. Power sales also support many nonpower-related expenses associated with these projects.

The Administration's budget request includes language that resolves a needed scoring change on the use of appropriations for purchase power and wheeling and sends customer payments for PPW services directly to DOE rather than the Treasury.

However, APPA is concerned that the Administration does not request adequate funding for fiscal year 2001 for PPW. The Administration request of $70 million is inadequate to meet PPW services. APPA believes the Administration's proposal which sunsets appropriations and puts spending caps on PPW activities of the Western Area Power Administration, Southwestern Power Administration and Southeastern Power Administration in the next four years is unnecessary since customers payments for PPW services match DOE outlays on a dollar for dollar basis.

APPA urges the Committee to increase PPW funding levels for the three PMAs to $89 million and strike language that establishes spending caps and sunsets the use of appropriations after fiscal year 2004.

FEDERAL ENERGY REGULATORY COMMISSION (FERC)

APPA supports the Administration's budget request of $175 million in fiscal year 2001 for the Federal Energy Regulatory Commission (FERC). Adequate funding for the agency is particularly necessary at this time in order to provide the resources needed to continue implementation of electric utility industry restructuring and to address major issues such as development of regional transmission groups.

The FERC is charged with regulating certain interstate aspects of the natural gas, oil pipeline, hydropower, and electric industries. Such regulation includes issuing licenses and certificates for construction of facilities, approving rates, inspecting dams, implementing compliance and enforcement activities, and providing other services to regulated businesses. These businesses will pay fees and charges sufficient to recover the Government's full cost of operations.

CLIMATE CHANGE PROGRAMS

APPA generally supports the fiscal year 2001 Budget Request of $1.1 billion to fund the Climate Change Technology Initiative. The initiative consists of a package of tax incentives and investments in research and development to stimulate increased energy efficiency and to encourage greater use of renewable energy sources. APPA is an aggressive advocate of federal support for energy research and development. While these programs do not directly provide benefits or incentives to public power systems, APPA supports them nevertheless because they will result in substantial improvements to the environment.

U.S. DOE programs under the Climate Change Initiative include a mix of tax credits and federal-spending programs designed to increase efficiency and greater use of renewable energy resources. Important elements of the initiative include support for the deployment of clean technologies for buildings, transportation industry and electricity.

NEW YORK AND NEW JERSEY WATER RESOURCE PROJECTS

PREPARED STATEMENT OF THE GREEN BROOK FLOOD CONTROL COMMISSION

Mr. Chairman and Members of the Subcommittee: My name is Vernon A. Noble, and I am the Chairman of the Green Brook Flood Control Commission. I submit this testimony in support of the Raritan River Basin—Green Brook Sub-Basin project, which we request be budgeted in fiscal year 2001 for $4,000,000 in Construction General funds.

Extremely heavy rains began on Thursday, September 16, 1999, extending over the Green Brook Sub Basin of the Raritan River Basin. These rains were heavily concentrated in the upper part of the Raritan River Basin.

By night fall on that day, the river systems were greatly swollen, particularly the Raritan River. The flood levels in the Raritan River have a direct effect on the Bound Brook Borough and Middlesex Borough portion of the Green Brook Sub Basin.

Bound Brook has streams on three sides: the Green Brook, which empties into the Raritan River on the east end of Bound Brook Borough; the Middle Brook, which borders Bound Brook Borough on the west, and likewise empties into the Raritan River; and the Raritan River itself, which forms the southern boundary of the Borough of Bound Brook.

All three of these streams rose to flood levels during Thursday night, September 16th, and the early hours of Friday, September 17, 1999.

By early morning on Friday, September 17, 1999 water levels around Bound Brook had reached unprecedented levels.

The water surface elevations around three sides of Bound Brook Borough slightly exceeded even the calculations made by the Corps of Engineers in their final General Reevaluation Report of May 1997.

There were tremendous monetary damages, and although the final figures are not yet known, it now seems clear that the damages exceeded the figure predicted by the Corps of Engineers for a 150 year flood ($106,500,000) for Bound Brook Borough alone.

Beyond the monetary damages, there was vast human suffering. The tragic plight of the people of Bound Brook touched the hearts of people throughout New Jersey, and volunteers and food and clothing and rolled-up-sleeves volunteers poured into Bound Brook from all over New Jersey.

All of this raises a very fundamental question: If the Green Brook Flood Control Project, as authorized by Congress, had been completely constructed, would this tragedy have happened?

That's a question which the Green Brook Flood Control Commission has intensely examined. We are greatly relieved to report to you that, although there would have been minor flooding in low spots in Bound Brook, as there always is in every heavy rain storm, the massive flooding and tragic aftermath would not have happened.

A thorough study of the water levels throughout the area, done by the New York District of the Corps of Engineers since the terrible flood of September 1999, has shown that, although the water reached record levels, it would have been contained by the extra margin of safety, the "free board", which the Corps of Engineers has incorporated in the design of this Project.

The flooding of September 1999 is not the first bad flood to have struck this area. Records show that major floods have occurred here as far back as 1903.

Disastrous flooding took place in the Green Brook Basin in the late summer of 1971. That flood caused $304,000,000 in damages (April 1996 price level) and disrupted the lives of thousands of persons.

In the late summer of 1973, another very severe storm struck the area, and again, thousands of persons were displaced from their homes. $482,000,000 damage was done (April 1996 price level) and six persons lost their lives.

The Green Brook Flood Control Commission was established in 1971, pursuant to an Act of the New Jersey Legislature shortly after the very bad flood of 1971.

The Green Brook Flood Control Commission is made up of appointed representatives from Middlesex, Somerset and Union Counties in New Jersey, and from the 13 municipalities within the Basin. This represents a combined population of almost one-quarter of a million (248,084) people.

The Members of the Commission are all volunteers, and for 29 years have served, without pay, to advance the cause of flood protection for the Basin. Throughout this time, the Corps of Engineers, New York District, has kept us informed of the progress of the project, and a representative from the Corps has been a regular part of our monthly meetings.

During 1998, the Congress, with the agreement of the President, provided money to initiate construction of the Project. Final preparations are now underway, and it is expected that actual construction will begin in Bound Brook Borough and in western Middlesex Borough this year.

We believe that it is clearly essential that the Green Brook Flood Control Project be carried forward, and pursued vigorously to achieve protection at the earliest possible date. This Project is needed to prevent loss of life and property, as well as the trauma caused every time there is a heavy rain.

New Jersey has programmed budget money for it's share of the Project in 2001.

We urgently request an appropriation for the Project in fiscal year 2001 of $4,000,000 as proposed by the Administration.

The Green Brook Flood Control Commission is dedicated to the proposition that Bound Brook Borough, and the other municipalities, and their thousands of residents, who will otherwise suffer in the next major flood, must be protected. We move forward with renewed determination to achieve the protection which the people of the flood area need and deserve.

With your continued support, we are determined to see this Project through to completion.

Thank you, Mr. Chairman, and Members of the Subcommittee, for your vitally important past support for the Green Brook Flood Control Project; and we thank you for the opportunity to submit this testimony.

PREPARED STATEMENT OF THE CITY OF NEWARK, NEW JERSEY

Mr. Chairman and members of the Subcommittee, thank you for giving me the opportunity to submit testimony about a project under your jurisdiction which is very important to the people of Newark, New Jersey and the surrounding region. The Passaic River Streambank Restoration Project, known as the Joseph G. Minish Passaic River Waterfront Park and Historic Area, is an important part of the overall economic, land use and transportation development plan of the City of Newark.

The Joseph G. Minish Park/Passaic Riverfront Historic Area project addresses the restoration and rehabilitation of approximately 9,000 linear feet of Passaic River shoreline from Bridge Street to Brill Street in the City of Newark. The project is divided into three phases. Phase I consists of bulkhead replacement (Bridge Street to Jackson Street) and wetlands restoration (Jackson Street to Brill Street). Phase II consists of the construction of a 40′ wide promenade along the river's edge, on top of the completed bulkhead work. Phase III includes the construction of parkland on the inland side of the promenade, between the river and Newark's downtown.

An appropriation of $25 million for the continuation of construction on the Newark Riverfront Development project is requested, so that this integral element in Newark's revitalization can move forward as planned, and can be utilized by the Army Corps of Engineers, in fiscal year 2001. The fiscal year 2000 appropriation has been used for the initial section of bulkhead construction, which is now underway. The fiscal year 2001 allocation will allow continued construction of the bulkhead down to Penn Station, fund design of the walkway and park area, and allow walkway construction to begin. This restoration will allow neighborhood residents direct access to the riverfront as part of a much-needed recreation complex.

The project was authorized at a level of $75 million in the 1996 Water Resource Development Act, and has been fully planned by the Army Corps of Engineers. The streambank restoration and bulkhead replacement, which is the first phase of the overall project, began in the fall of 1999 utilizing the fiscal year 1999 and 2000 appropriations. Prior appropriated funds have been utilized to fully design the bulkhead, a segment of naturalized streambank, and a system of walkways and public open spaces. Adjacent, currently dormant, sites have become desirable locations for development of commercial properties, due to the projected walkway, park and open space facilities. However, the current funding will only take us through the construction of bulkhead and some of the mud flats restoration, not to a usable facility.

A supplemental appropriation of $25 million is requested so that this integral element in Newark's revitalization can move from partial construction to the beginning of full project build-out. This investment in Newark's future will help us to improve the economic status of our nation's third oldest major city. The development of the riverfront now is a critical element in the overall plan for Newark's downtown revitalization. This linear park will serve as a visual and physical linkage among several key and exciting development projects. It is adjacent to one of the oldest highways in the nation, Route 21, which is undergoing a multi-million dollar realignment and enhancement. A light rail system, the Newark-Elizabeth Rail Link, which will connect Newark's two train stations, and ultimately, Newark International Airport and the neighboring City of Elizabeth, will provide users with access to mass transportation. Conversely, the riverfront will become a destination served by that system, providing an important open space and waterfront opportunity for residents of one of the most densely populated cities in the nation.

The environmental benefits of the project include flood control, riverbank and wetlands restoration, creation of urban green space, and enhancement of water quality in the Passaic River. These improvements will allow the Passaic River to be converted from one of the nation's most troubled waterways to a cultural and recreational asset. Ongoing and planned greenway projects will provide pedestrian and bicycle access to the waterfront from Newark's residential neighborhoods as well as the City's five major institutions of higher learning.

The riverfront development will complement and provide a visual and physical connection with the new, $170 million New Jersey Performing Arts Center, which opened in the Fall of 1997 and has been incredibly successful. Further north along the riverfront, also accessible from the riverfront walkway when it is fully built, the City of Newark and Essex County have opened Riverfront Stadium, home to a

minor league baseball team as well as community sporting events such as the Project Pride Bowl. Also in close pedestrian proximity is the site for the new Newark Sports and Entertainment Arena, which is expected to bring two million visitors a year into the area. In addition, NJ Transit is just completing construction of a new concourse, which is directly adjacent to the riverfront. Once the park and walkway are completed, rail and bus passengers will be able to exit the Penn Station north concourse directly onto the riverfront area. On the eastern portion of Minish Park, residents of a crowded community, Newark's Ironbound, will have direct access to the river and its streambank for active and passive recreation for the first time. The riverfront will be the nexus of these activities, creating a vibrant downtown center that will provide economic development opportunities for the citizens of Newark and our region. Visitors from throughout the nation are expected to come to visit our revitalized city, and participate in the exciting growth and development taking place. There is tremendous potential for Newark's riverfront to mirror the success of other riverfront developments throughout the country, and Newark stands ready to accept the challenges such developments present.

The City of Newark has just completed conducting a master plan study for the entire riverfront area, which will guide us in tying together these incredibly exciting, and challenging, projects. We have a once in a lifetime opportunity to coordinate several major development activities into a virtually seamless development plan. The appropriation of $25 million which I am requesting will serve to incorporate the Army Corps of Engineers' construction into our overall economic development plan to reinvigorate Newark. I urge you to support this appropriation request.

In closing, I would like to extend my thanks to the entire New Jersey delegation for its ongoing support, especially to subcommittee member Rodney Frelinghuysen for his advocacy of this critical project. The time and attention of this subcommittee are deeply appreciated.

PREPARED STATEMENT OF NEW YORK UNIVERSITY

On behalf of New York University (NYU), I appreciate the opportunity to discuss a project of scientific research which we believe will advance national interests through enhanced understanding of the human genome, and which is an important priority for NYU.

This project addresses the programmatic interests of the subcommittee in enlisting fundamental, university-based scientific research to serve the national welfare. We thank the Subcommittee and for taking the time to consider and give its support to important basic research in biomedical genomics, an area in which New York University is well positioned to make major contributions. We at NYU firmly believe that in the coming decades, a federal investment in fundamental scientific research will repay itself many times over.

The genome is the recipe or blueprint for life. During the last decade, the unraveling of the genetic code has opened up a vast range of new opportunities for evolutionary and developmental biologists, neurobiologists and chemists to understand what genes are, what they do, and how they do it. The field of biomedical genomics is revolutionizing biology and is dramatically changing the way we characterize and address biological questions. As a field which straddles biology, chemistry, and mathematics, genomics is growing extraordinarily rapidly and transforming these disciplines, as well as the social and behavioral sciences.

In its first stage, the revolution in genomics was characterized by a period of intensive development of techniques to analyze DNA, first in simple models, like yeast, bacteria, the worm, and the fruitfly, then in the mouse, and now in humans. The structure and function of genes are quite similar in these models, making comparisons useful. The second phase was characterized by the use of these tools to address whatever biological question was most easily approached, given the state of technique development. It may be described as structural genomics—which comprises the mapping and sequencing of genomes and is mainly driven by technology. The scientific community is now poised to enter the third phase of the genomics revolution, in which investigators already established in other fields (immunology, genetics, neurobiology, etc.) pursue investigations that are driven by hypothesis rather than technique. The third phase is generally termed functional genomics and uses the map and sequence information already collected or to be collected to infer the function of genes. Functional genomics actively integrates basic and clinical science, with the ultimate goal of exploiting genomics approaches to address the relationship between the genes identified in model organisms and those responsible for human disease states.

While many universities are conducting genomics research, New York University is especially well positioned to make a distinctive contribution to the field of comparative functional genomics. This comparative approach looks for the occurrence of the same genes in different species that share certain structures or functions, and provides a powerful method for understanding the function of particular genes. Comparative functional genomics uses two primary modes of analysis: (1) identifying what has been conserved over long evolutionary distances, and (2) determining crucial differences that distinguish two closely related species. This focus has particular relevance to molecular medicine as it provides the key to understanding the genetic basis of disease states that are dependent on numerous genes, and unraveling the complex regulatory networks for crucial biological functions.

Studies in comparative functional genomics necessarily synergize medically related research programs, such as those at the NYU School of Medicine and its affiliated Mount Sinai School of Medicine; with basic science research programs such as those at NYU's Faculty of Arts and Science; and with computational investigators, such as those at NYU's Courant Institute of Mathematical Sciences who are actively engaged in bioinformatics research.

In the basic sciences, NYU has substantial strengths in areas important to genomics, including evolutionary biology, developmental biology, and neurobiology, and extends this expertise through active collaboration with premier metropolitan area institutions, including the New York Botanical Garden and the American Museum of Natural History. NYU Medical School has outstanding programs in Developmental Genetics, Molecular Neurobiology, Pathogenesis and Structural Biology. And Mount Sinai Medical School has an internationally acclaimed program in Human Genetics and has begun to use genomics approaches to identify the origins of human genetic disorders.

New York University is thus poised to make a distinctive contribution to the next phase of genomics research. There are established frameworks for interdisciplinary and interschool collaboration, strengths in biological, neurobiological, and computational sciences, and standing in the international scientific community. The nation's largest private university, with 13 schools and over 49,000 students, NYU is a leading center of scholarship, teaching and research. It is one of 29 private institutions constituting the distinguished Association of American Universities, and is consistently among the top U.S. universities in funds received from foundations and federal sources.

NYU encompasses a pre-eminent faculty and generates substantial external funding from federal and state agencies as well as the private sector. These investigations have attracted millions of federal dollars from the NIH, NSF, ONR, and EPA. In addition, NYU has received major funding from the most prestigious private foundations supporting the sciences, including the Howard Hughes Medical Institute, the W. M. Keck Foundation, the Alfred M. Sloan Foundation, and the Beatrice and Samuel A. Seaver Foundation. Faculty have, as individuals, won prestigious awards, including HHMI Investigator, NSF Presidential Faculty Fellow, NIH Merit Awardee, McKnight Foundation Scholar in Neuroscience, and MacArthur "Genius" Fellow.

RESEARCH APPLICATIONS AND NATIONAL BENEFITS

Concentrated studies in comparative functional genomics can be a major resource for the research and development activities of academic organizations and commercial firms; can provide a strong framework for direct and indirect economic development in vital, high-tech industries; and can offer benefits to our citizens from improved health care, and technology development.

Economic Development

Commercial applications that strengthen existing industries and attract new ones.—In a familiar dynamic of university-centered economic growth, industry draws on the faculty's entrepreneurial energies, their expertise in training the personnel needed to staff high-technology firms, and the fundamental scientific research that can translate into practical applications. High-tech firms spring up near a research university and, in turn, attract or spin off additional high-tech firms in the same or related fields. The interaction of scientists across firms makes the spread of information quicker and the development of projects more rapid. Initial firms and newer firms share a growing pool of highly trained personnel. The expansion of the skilled labor pool makes hiring easier; the existence of the pool attracts still more firms. Once a core of high-tech industries locates in an area, venture capitalists identify that area as promising. The flow of capital—a key ingredient for high-technology growth—increases. Once the process of agglomeration begins, it can be expected to grow on itself and become self-reinforcing.

R & D investment in genomics is already energizing bio-technology, pharmaceutical, biomedicine, agbiotech, computer software, and engineering enterprises. We expect that as the research base expands, we will see a generation of new commercializable technologies, some of which may lead to genome and pharmacological genome companies.

Job growth as a spin-off from research and development funding for genomics.—Academic R&D, although itself not directed towards specific commercial application, does provide the focus for attracting industry and serving as a base for commercial spin-offs, as has been so successfully demonstrated in the San Francisco Bay and Boston areas. A conservative approximation that uses state employment multipliers maintained by the U. S. Commerce Department's Bureau of Economic Analysis points to immediate employment impacts of academic R&D. The BEA calculates that each $1 million in R&D grants supports roughly 34.5 full and part time jobs [1] directly within the university and indirectly outside the university as the university's expenditures ripple through the local and state economy.

Biomedical Applications for National Health Needs

An investment in genomics research will have a heavy payoff in the nation's well-being—economic and otherwise—by advancing the frontiers of knowledge, finding new cures and treatments for diseases, and helping to develop new diagnostic technologies. Clinical applications hold enormous promise to revolutionize medicine and our understanding of both normal development and disease. Genomics research may lead to lifesaving instruments or procedures for diagnosis, prevention, and cure of diseases and disorders such as diabetes, heart disease, cancer and infectious disease. In particular, genomics science has the potential to revolutionize the development of mass screening tests for genetic disorders, ultimately making it possible to identify the hereditary contribution to common diseases, predict individual responses to drug intervention, and design drugs that are customized for individual use.

Applications for Environment Issues

Improved understanding of the human genome is a basic link in the chain leading from scientific discovery to a better understanding of human health to effective regulatory and management actions in the realm of environmental protection. Research into genetic development and function can help to explain how environmental factors alter or influence these processes.

Advances in Biomedical and Other Research Fields

Genomics is a field which is particularly fertile in that the understanding of the detailed structure of the human genome is central to a variety of applications: cell biology, embryology, developmental biology, study of cancers and many other heritable diseases, immunology, endocrinology, neurology, and population genetics. Further, genomics techniques can address many research problems that overlap with computer vision, robotics, and combinatorial problems; genomics propels cross-disciplinary approaches for merging the biological sciences with new technologies in informatics. In addition, it is enabling researchers in developmental biology and molecular genetics to investigate genetic diversity, evolution, and development. Indeed, genomics brings together laboratory scientists with formerly unrelated disciplines, and can stimulate expansion in key directions in informatics, genetics, physical chemistry, evolutionary studies, diagnostic tools, and machine vision. Investment in facilities where computer scientists, physical chemists, and geneticists can readily interact with each other is essential for the development of this field.

Investment in genomic science is a strategic and efficient vehicle for advancing fundamental studies in a wide variety of scientific fields; facilitating biomedical applications that can greatly enhance the public welfare; and energizing existing and new industry. The commitment of this committee to support genomics studies is greatly appreciated.

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[1] The multiplier is for 1995 and is based on 1987 benchmark input-output accounts for the U.S. economy and 1994 regional data, adjusted for 1995 inflation. See the latest (March 1997) edition of the BEA publication Regional Multipliers: A User Handbook for the Regional Input-Output Modeling System (RIMS II). These multipliers are frequently used in studies of the economic impacts of individual universities and colleges.

PREPARED STATEMENT OF THE UNIVERSITY OF MEDICINE AND DENTISTRY OF NEW JERSEY

The following is the testimony of the University of Medicine and Dentistry of New Jersey (UMDNJ), the largest public health sciences university in the nation. Our statewide system is located on five academic campuses and consists of 3 medical schools and schools of dentistry, nursing, health related professions, public health and graduate biomedical sciences. UMDNJ also comprises a University-owned acute care hospital, three core teaching hospitals, an integrated behavioral health care delivery system, a statewide system for managed care and affiliations with more than 200 health care and educational institutions statewide. No other institution in the nation possesses the resources which match our scope in higher education, health care delivery, research and community service initiatives with federal, state and local entities.

We appreciate the opportunity to bring to your attention our priority projects that are consistent with the biomedical research mission of the Department of Energy & Water. These projects are statewide in scope and include collaborations both within the University system and with our affiliates. Our research projects also underscore UMDNJ's commitment to eliminating racial disparities in health care delivery. New Jersey, with its small geographic size and its large diverse population, is an idea site in which to conduct research and develop activities that will address this important issue.

Our first priority is the development of the Child Health Institute of New Jersey at the UMDNJ-Robert Wood Johnson Medical School (RWJMS) in New Brunswick. As part of the state's public higher education system, the medical school's 2500 full-time and volunteer faculty train about 1,500 students in medicine, public health and graduate programs and ranks in the top one-third of the country with regard to the percentage of its students who practice in primary care specialties after completing their residency training. The medical school ranks in the top one-third in the nation in terms of grant support per faculty member. RWJMS is home to The Cancer Institute of New Jersey, the only NCI-designated clinical cancer center in New Jersey; The Center for Advanced Biotechnology and Medicine; the Environmental and Occupational Health Sciences Institute, the largest environmental institute in the world; and the Child Health Institute.

The mission of the Child Health Institute is to build a comprehensive biomedical research center that is focused on molecular genetics and development of children, and to forge scientific and hospital-based programs into an international academic children's center that will prevent and treat childhood diseases by delivering new knowledge through integrated education, research and treatment. The CHI will partner with academic, biotechnology, pharmaceutical and informatics industries in New Jersey to further its mission.

The Child Health Institute will enable the medical school to expand and strengthen basic research efforts with clinical departments at the Robert Wood Johnson University Hospital and with the new Children's Hospital in the areas of Obstetrics, Pediatrics, Neurology, Surgery and Psychiatry The Child Health Institute will fill a critical gap in services through the recruitment of an intellectual base upon which molecular programs in child development will build.

At the Child Health Institute, research will serve as the basis for new treatments, therapies and cures for such devastating and debilitating childhood syndromes as asthma, autism, cancer, diabetes, heart and lung defects. One-third of our scientists will focus on human genome research (birth defects, cystic fibrosis, etc.); one-third will focus on developmental neuro-biology (autism, attention-deficit disorders, etc.) and one third will focus on developmental biology (diabetes, asthma, etc.). Our biomedical researchers will direct their efforts toward the environmental, genetic and cellular causes of these diseases in infants and children through basic scientific investigation in a quest to prevent, treat and cure these diseases.

Normal child development is a water dependent process, reflecting water quality, quantity and its "management" by cells and tissues. Access to uncontaminated water is at the base of the tree of life. Pollution of aquatic ecosystems poses a serious threat to the entire ecosystem and studying how a toxin affects embryonic development is central to understanding the risks pollutants represent, whether derived from pesticides, industrial run-off, acid rain or landfills. In multiple ways, the embryo is a sentinel for environmental toxins. Research at the Child Health Institute will focus on molecular mechanisms of early embryonic development, a natural, but vulnerable water-based environment. Sixty percent of the weight of the average human is contributed by water. The average 150 lb man contains about 40 to 45 quarts of waters, approximately 6 quarts of which is circulating in the blood, and 39 quarts are within and between the cells of each and every organ. The embryo

is even more highly hydrated than the adult. During development the embryo undergoes rapid changes in size and shape requiring rapid changes in the structures and cells present in any one tissue. In order to accommodate these rapid and essential changes, the embryo is rich in molecules which have a very high water binding capacity. After birth, the water in tissues allows cells to continue to move about within the embryo with ease and also promote fluid movement in blood vessels, the gastrointestinal tract and the airways. For example, cystic fibrosis (CF) is an inherited disorder which afflicts millions of children world-wide. The genetic defect in CF has been identified and involves a pump which, in effect, moves salt and water into and out of cells. Children with CF insufficiently pump water into the secretions of their pancreas and lungs and the dryness of these secretions leads to obstruction of those organs and subsequent infection and/or obstruction.

The CHI will act as a magnet for additional growth in research and health care program development in New Jersey. The Institute will encompass 83,000 gross square feet and will house more than 40 research laboratories and associated support facilities. Fourteen senior faculty will direct teams of M.D. and Ph.D. researchers, visiting scientists, postdoctoral fellows, graduate students and technicians for a full complement of some 130 employees. At maturity, the Institute is expected to attract $7 to $9 million dollars of new research funding annually. The Institute's total annual operating budget is projected to be $10 to $12 million: applying a standard economic multiplier of 5, the total impact on the New Brunswick area is estimated to be $50 to $60 million per year. Construction costs for the Institute are estimated at $27 million, with approximately half of that figure associated with local employment.

We respectfully seek $5 million from the Department of Energy and Water to complement $3 million already received in federal participation to further advance the construction and development of the Child Health Institute of New Jersey.

Our second priority is the Dean and Betty Gallo Prostate Cancer Center, established at the Cancer Institute of New Jersey (CINJ) with the goal of eradicating prostate cancer and improving the lives of men at risk for the disease through research, treatment, education and prevention. GPCC was founded in memory of Rep. Dean Gallo, a New Jersey Congressman who died of prostate cancer diagnosed at an advanced stage. The purpose of the GPCC is to establish a multi-disciplinary center to study all aspects of prostate cancer and its prevention. The Cancer Institute of New Jersey is a partnership of UMDNJ-Robert Wood Johnson Medical School and hospital affiliates.

GPCC unites a team of outstanding researchers and clinicians who are committed to high quality basic research, translation of innovative research to the clinic, exceptional patient care, and improving public education and awareness of prostate cancer. GPCC is a center of excellence of the Cancer Institute of New Jersey, which is the only NCI-designated cancer center in the state. GPCC efforts will be focused in four major areas: (1) Basic, Clinical and Translational Research; (2) Comprehensive Patient Care; (3) Epidemiology and Cancer Control; and (4) Education and Outreach.

Basic, Clinical and Translational Research.—GPCC scientists will investigate the molecular, genetic and environmental factors that are responsible for prostate cancer initiation and progression. Our researchers will develop appropriate model systems that will facilitate the design and implementation of novel strategies for prevention and treatment. GPCC will foster multi-disciplinary efforts that will lead to the effective translation of basic research to improved patient care and novel clinical trials.

Comprehensive Patient Care.—It is the goal of the GPCC to provide exceptional patient care through a multi-disciplinary patient care team in the areas of urological oncology, radiation oncology and medical oncology for each patient during all stages of the disease. The patient care team will develop novel clinical approaches for treating all stages of prostate cancer.

Epidemiology and Cancer Control.—Another goal of the GPCC is to understand the etiology of prostate cancer susceptibility and to find effective modalities for prevention of prostate cancer.

Education and Outreach.—GPCC will continue its efforts to education the public throughout the State of New Jersey about the importance of early detection of prostate cancer, particularly in underserved communities where there is a population at high risk for the disease.

The Cancer Institute of New Jersey has received $5 million in federal funding over the last two years (including $2 million from this committee) for the Dean and Betty Gallo Prostate Cancer Center. This important funding has enabled us to establish a world-class program in prostate cancer research that includes publications in prestigious journals such as the New England Journal of Medicine and Genes and

Development. CINJ has used its findings to leverage additional research dollars for individual investigators from such agencies as CapCure, the Department of Defense and several private foundations. Top investigators have been recruited to initiate programs in prostate cancer research through our education and pilot grant programs. We have also established education and outreach programs that will enhance the visibility of our clinical programs, including a partnership with the 100 Black Men organization.

Additional funding is being sought this year to build on our basic research in prostate cancer and to support the development of technological approaches including: the use of microarray technology to survey gene expression patterns in prostate tumors; the use of mouse models for prostate cancer that can be used to test new methods of prevention and treatment; and the development of monoclonal antibodies that may be used for prognosis and diagnosis.

We will also bring basic research directly to the clinic by fostering interactions among basic and clinical researchers through our education programs supported by this funding. Additional funding will allow us to enhance our treatment of patients with prostate cancer through several new clinical trials for patients at all stages of the disease. To increase the number of additional clinical trials, we will utilize funding to develop a support team that will assist our physicians to design and implement new clinical trials.

We seek $2 million in federal funding to enhance the research, education and cancer care programs of the Dean and Betty Gallo Prostate Cancer Center at our New Brunswick facility, and to expand these programs statewide.

We thank this committee for its strong support of biomedical research and for our programs.

PREPARED STATEMENT OF THE STATE OF NEW YORK, EMPIRE STATE DEVELOPMENT CORPORATION; STATE OF NEW JERSEY, DEPARTMENT OF TRANSPORATION; AND THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY

On behalf of the Port of New York and New Jersey, we wish to thank you for the support this Subcommittee has shown for navigation programs in recent years. Only with the support of this Subcommittee and Congress can the nation's commercial and defense shipping needs be accommodated through the Army's civil works program. We are especially appreciative of the funding that projects in our port have received to enable it to continue to serve our country's economic and international commerce objectives on the Atlantic.

We offer our comments on the U.S. Army Corps of Engineers' fiscal year 2001 budget request. We welcome the Administration's budget request to continue the construction of the Kill van Kull-Newark Bay Channels to 45 feet as well as the construction funding for the Arthur Kill Channel to 41 feet and the Port Jersey Channel to 41 feet. In order for the benefits of these and other projects to be realized and to avoid unnecessary project cost increases from project delays, we respectfully request that the Subcommittee appropriate funds at the levels outlined below in this statement. These funds will ensure that essential navigation infrastructure will be in place to accommodate post-Panamax ships currently deployed in international commerce. That is especially true of the New York & New Jersey Harbor Navigation project that represents a significant investment strategy, only a small portion of which would be in Federal funding, for waterside and landside improvements that will serve our customers and the national interest well into this new century. We are especially aware of the clear trends in steamship design and construction that will result in an increasing fleet of very large container ships whose efficiencies will be realized fully once the navigation channels at major U.S. gateways are of a corresponding depth. The Port of New York and New Jersey directly serves states of the Northeast and Midwest and with these improvements can continue to provide greater transportation efficiencies to those markets.

In general, we support the Administration's budget request for projects in the Port of New York and New Jersey. Listed below are select projects, discussed later in this statement, and appropriation amounts that we seek for fiscal year 2001. Those projects displayed in bold are our requests beyond the fiscal year 2001 budget levels.

	Budget	Port request
Construction:		
Kill van Kull—Newark Bay Channels, NY & NJ	$53,000,000	$53,000,000
NY & NJ Channels: Arthur Kill, NY & NJ	5,000,000	15,000,000

	Budget	Port request
NY & NJ Channels: Port Jersey, NJ	5,469,000	15,000,000
Ambrose Shoals	.....	2,200,000
Studies:		
NY & NJ Harbor Navigation Study—PED	2,528,000	7,500,000
NY & NJ Estuary Restoration Study	800,000	5,000,000
NY & NJ Channels: Arthur Kill Channel, NY & NJ	347,000	347,000
Operation and Maintenance	28,284,000	28,284,000

A brief description of each of these activities follows.

CONSTRUCTION

Kill van Kull—Newark Bay Channels, NY & NJ (Phase II).—The deepening of the Kill Van Kull and Newark Bay Federal channels to 45 feet was authorized for construction in the fiscal year 1985 Supplemental Appropriations Act. These channels serve Port Newark and the Elizabeth Port Authority Marine Terminal, the busiest and largest container facilities on the East Coast. The Port of New York and New Jersey achieved a major milestone in this project by witnessing the beginning of the final phase of construction in 1999. Since that time, the project is fully underway with progress to report and three contracts awarded, two of them well under project estimates. The Port Authority of New York & New Jersey as local sponsor for this project has approved the local share of funding and is committed to completing construction with the Corps of Engineers by the end of 2004. It is a goal mandated by the users of the Port who have waited a long time for the 45-foot depth. We appreciate and support the President's budget of $53 million.

NY & NJ Channels: Arthur Kill Channel, NY & NJ.—The Arthur Kill Channel, NY & NJ, Howland Hook Marine Terminal (HHMT) project authorization can be found in the 1986, 1992, 1996 and 1999 WRDAs. The project's controlling depth is currently 35 feet. The planned channel improvements include: (1) deepening the existing 35-foot channel to 41 feet below MLW from its confluence with the Kill van Kull Channel to the Howland Hook Marine Terminal; (2) deepening to 40 feet below MLW from the HHMT to the Petroport and Tosco facilities in New Jersey; and (3) selective widening and realignment of the channel to ensure safe navigation. The Port Authority has invested $35 million to date to modernize the HHMT and spent, along with the City of New York, approximately $18 million for the berth dredging required to return this terminal into active service. The Port Authority has approved an amount representing the full local share of the Federal project. The HHMT currently employs 600 people on peak days and is expected to increase to a range of 800 to 1000 employees in 2000. These figures, as compared to our statement of last year, reveal a significant increase in business at the terminal in the past year, which itself demonstrates the trade growth demands on the infrastructure on the Arthur Kill. The City of New York, the State of New Jersey and the Port Authority are working to improve operational efficiency and reduce truck traffic by re-establishing rail service to the terminal. It is worth noting that HHMT is the Defense Department's Northeast Strategic Port of Embarkation in the event of a national emergency, which gives it a special role to play in the national defense strategy. In addition to the benefits that will accrue to the HHMT and the petroleum facilities along the Arthur Kill, implementation of this deepening project is vital to the Port's future capacity to grow. We, therefore, respectfully request that the fiscal year 2001 appropriations include $15,000,000 to initiate channel improvements in the Arthur Kill Channel and maximize the work that can be accomplished during the first year of construction.

New York Harbor and Adjacent Channels: Port Jersey, NJ.—The 1986 WRDA authorized construction of the Port Jersey Channel to 41 feet. The Port Jersey Channel, located in Bayonne, NJ, presently serves approximately one-half dozen shipping lines calling at Global Marine Terminal. In addition, the channel provides access to the Port Authority Auto Marine Terminal and will serve a portion of the former Military Ocean Terminal at Bayonne that will be developed into another deepwater marine terminal facility. As the only privately owned terminal in the port, Global pays approximately $10,000,000 in Federal, state, and local taxes annually. More than 300 vessels, carrying approximately 280,000 twenty-foot equivalent units, call annually upon the terminal. Well over 600 terminal employees, with an annual payroll of $25 million, and 3,000 indirect jobs depend on this facility for their livelihood. Recognizing the demand of ocean carriers and responding to a critical need to provide deeper water on an emergency basis, the State of New Jersey in 1997 con-

structed a 38-foot channel leading to Global at a cost of $14,000,000. We appreciate the Administration's request of $5,000,000 for fiscal year 2001 and respectfully request that the budget for this project be augmented to $15,000,000 to initiate construction plans and specifications necessary to improve the Port Jersey Channel.

Ambrose Shoals.—This project is not anticipated in the fiscal year 2001 budget prepared by the Administration but is an important one for the safe navigation of vessels entering the Port of New York and New Jersey. The shoal is located in the sea one mile before ships enter the Ambrose channel, the port's entrance channel. In contrast to the Ambrose Channel project depth of 45 feet, a recent survey identifies a current controlling depth of 41 feet. The removal of this hazard to navigation would entail moving 125,000 cubic yards of dredged material. This project is contemplated under the New York & New Jersey Harbor project described in the studies portion of this statement but the New York and New Jersey Sandy Hook Pilots and concerned agencies in the region request that construction funding be provided in fiscal year 2001 in order to get a start on a removal project before an accident might occur. We request that $2, 200,000 be appropriated, which is the current Corps of Engineers' estimated cost of construction.

OPERATION AND MAINTENANCE

Operation and maintenance projects are critical to the Port of New York and New Jersey's operations. If channels are not maintained to the depth recorded on nautical charts they become inaccurate and increase the risk of groundings to vessels. We, therefore appreciate the Administration's request $28.28 million in operation and maintenance funding and encourage the Subcommittee's consideration of that request.

STUDIES

NY & NJ Harbor Navigation Study.—In the feasibility study, authorized by the 1996 WRDA, the Corps of Engineers has determined there is a clear Federal interest in deepening several major NY & NJ Harbor channels to 50 feet below MLW, or greater. The States of New York and New Jersey and the Port Authority are the local sponsors of the study, which is being put in final form now and on the basis of which we are prepared to ask Congress to enact new project depth authorizations. The Corps' recommendations, if implemented, would enable the Port to continue to serve the nation's marine transportation needs as U.S. international trade doubles in just the next ten years and quadruples by 2040. The ocean carrier industry has made it clear that their future container vessels will require navigation channels dredged to depths that exceed current depths. For these reasons, the States of New York and New Jersey and the Port Authority are in agreement that work to deliver the deeper channels should be completed as soon as possible. We therefore respectfully request that the fiscal year 2001 budget be augmented to $7.5 million in order to meet timeframes which local sponsors and the Corps of Engineers will agree are prudent and possible.

NY & NJ Channels: Arthur Kill Channel, NY & NJ.—As we noted earlier, the controlling depth for the Arthur Kill is 35 feet. Even as construction will commence in fiscal year 2001 for the 41-foot project, the Subcommittee willing, planning for an ultimate depth of 45 feet should continue. The 1996 WRDA authorized the project depth to as much as 45 feet. Although new congressional authorization is needed to increase the Section 902 funding cap, a pre-construction, engineering and design effort will be needed for construction of the 45-foot channel. The Corps has estimated the cost of this study to be $2 million, with the local share provided by the State of New Jersey and Port Authority of New York and New Jersey. We support the Administration's request for $347,000 for Pre-construction Engineering and Design work in fiscal year 2001.

NY & NJ Estuary Restoration Project.—Proposed New York and New Jersey harbor improvements are likely to include activities beyond construction of traditional navigation infrastructure. The implementation of a restoration and remediation plan for the Hudson-Raritan Estuary is also a significant part of any future improvement strategy for the harbor. The Corps of Engineers' feasibility study on harbor restoration is an important first step to determining potential Federal and non-Federal projects. The Port Authority supports this initiative and is willing to be an active participant/sponsor of the study. To that end, we respectfully request that funds in the amount of $5,000,000 be appropriated for the Corps of Engineers to conduct the necessary feasibility study.

CONCLUSION

For the second year the Executive Branch sent Congress a budget that does a reasonable job of addressing the nation's navigational channel needs, at least in comparison to the prior year budgets that woefully underfunded the water resource program. It by no means addresses all needs, whether on the inland and coastal navigation system, along the American shores or in the flood plains of the nation. However, we believe that Congress has made tremendous progress in highlighting the importance of not neglecting our water-based infrastructure, notwithstanding criticism being leveled by certain organizations against Congress and the Army Corps of Engineers. Lastly, we would urge the Subcommittee to resist placing limitations on funding advances that might be made by non-Federal agencies in the interest of speeding project construction and the delivery of important benefits to the public. Thank you once more for your attention to the needs of our port and region.

NATIONWIDE WATER PROJECTS

PREPARED STATEMENT OF THE ASSOCIATION OF STATE FLOODPLAIN MANAGERS, INC.

The Association of State Floodplain Managers appreciates the opportunity to express support for fully funding several programs of the Army Corps of Engineers which can significantly expand the Corps' ability to reduce losses due to flooding. We have found that Planning Assistance to States (Section 22) and Flood Plain Management Services provide for important elements of effective floodplain management. The Riverine Ecosystem Restoration and Flood Hazard Mitigation Initiative offers new opportunities for use of non-structural options to achieve flood loss reduction. The National Shoreline Study requested by Congress in WRDA 99 has some initial funding proposed in the budget. These are all elements of the Corps' activities that are especially helpful to communities and states around the country in reducing flood losses.

The Association of State Floodplain Managers is an association of over 3,500 state and local officials and other professionals engaged in floodplain management, flood hazard mitigation, flood preparedness, warning and recovery and in working with numerous federal agencies, including the Corps of Engineers. Our members have expertise in the fields of engineering, planning, community development, hydrologic forecasting, emergency response, and water resources.

Three of the programs we are discussing, PAS, FPMS and Ecosystem restoration & mitigation, are all programs which directly support major themes the Corps is pursuing to formulate and implement Civil Works policy. They are based on building strong partnerships with states and local communities as well as other federal agencies. Additionally, that Civil Works policy should help economic growth and prosperity by "combining sound infrastructure management and development with environmental protection and ecosystem restoration". We full support these strategies for the Corps.

Under General Investigations, "Coordination Studies With Other Agencies" includes $6.5 million for Planning Assistance to States in the budget request for fiscal year 2001, the same as last years request. The Congress, in fiscal year 1999 provided 1 million over the budget request, to help reduce the work backlog and meet the growing need of localities and local and regional governmental entitles for technical assistance from the Corps. The Senate provided $7.5 million in recognition of the backlog and $6.3 was agreed to in Conference. The situation has, of course, been helped by the Congressional effort this fiscal year, but a significant backlog remains. Further, increasing federal efforts to encourage cooperation and capability building among federal agencies and state and local governments have produced more demand for the Corps' guidance and assistance. We hope that the Committee will approve funding at least at the budget request and, hopefully, once again at a measure above the budget request.

Also under General Investigations, Flood Plain Management Services, $9 million is requested for fiscal year 2001. The funding level for fiscal year 2000 was $8.5 Million. The Floodplain Management Services Program funds specific technical assistance requests from states, local governments and tribes. Generally, these address needs for identification of flood hazards in communities under growth pressure, assessing and taking steps to assure the safety of dams and providing the technical information to identify appropriate flood mitigation options, floodproofing, flood warning and hurricane evacuation studies. Without the technical assistance the Corps provides, structures may be built at risk, exposing citizens and the nation's taxpayers to future costs. Clearly, projects funded under FPMS work tangibly to re-

duce flood losses and costs to the Federal Government and support the partnership and economic growth/infrastructure management strategies above.

The Corps is requesting $20 million for its Ecosystem Restoration and Flood Mitigation initiative. This program would provide the Corps with a full-range toolbox to help communities and states. It offers essential flexibility such as the ability to accommodate smaller projects for communities where a traditional structural project might not be justified or the ability to mix structural and non-structural elements to better design an overall project. The continuing authorities nature of the proposed program is important because confidence in a sustained federal commitment is important to communities for development and implementation of these smaller projects. From our knowledge, hundreds of communities in the nation have the potential to benefit substantially from this innovative initiative. We hope that the Committee will provide the nation's communities with the valuable tools of this program.

Congress Authorized the National Shoreline Study in WRDA 99 in order to help the nation describe the extent of economic and environmental effects of erosion and accretion of our shorelines. The study is also to help identify appropriate benefits and costs to various levels of federal and non-federal participants in shore protection projects. We support proceeding with such a study so the nation will be better prepared to address and manage our shorelines to benefit everyone. The proposed budget provides $300,000 for starting this study under "General Investigations-Studies not under states". We urge the Committee to provide at least the budget request. In order to complete the study in the time Congress requested, funding of $500–750,000 would be appropriate.

It is a pleasure to share our views on the effectiveness and usefulness of these programs in the achievement of flood loss reduction. Thank you for the opportunity to present testimony. We are always ready to respond to your questions. Please contact ASFPM Executive Director, Larry Larson, at (608) 274–0123 if further information is needed.

PREPARED STATEMENT OF THE NATIONAL URBAN AGRICULTURE COUNCIL

Dear Chairman Domenici and Members of the Subcommittee: Mr. Chairman, Members of the Subcommittee, I am Roger Waters, President of the National Urban Agriculture Council (NUAC). NUAC is a national nonprofit organization established as a center for the promotion and implementation of effective water management in the urban landscape.

I would like to offer testimony on six Bureau of Reclamation programs: Drought Emergency Assistance; Efficiency Incentives, Water Management and Conservation, Technical Assistance to States, Soil and Moisture Conservation, and the Title XVI-Water Reclamation and Reuse.

DROUGHT EMERGENCY ASSISTANCE

NUAC has been an active participant in the efforts of the National Drought Policy Commission's efforts to produce a report on recommendations for a national drought policy for the country. Part of the core mission of NUAC is to act as a center for the acceptance, promotion, and implementation of practical, science-based water resource management and conservation practices. An important element of that mission is making sure water users are prepared for the eventuality of drought. We have been supportive of the efforts of the Commission to produce such a vision as part of their recommendations in the final report.

The Bureau of Reclamation requested $500,000 for fiscal year 2001. NUAC believes and would ask that Congress consider that given the drought problems in this country, that an additional $3 million be included in this program for fiscal year 2001. The Bureau of Reclamation and the Department of Agriculture appear to be the best agencies suited to working with state and local governments, tribes and local water users by undertaking activities that can result in down-the-road savings by the Federal Government not having to provide emergency bailouts to the degree they would if such preparedness does not take place.

EFFICIENCY INCENTIVES PROGRAM

NUAC is supportive of this program that provides a partnership among the Bureau of Reclamation, water users, and states to implement water use efficiency and conservation solutions that are tailored to local conditions. The Bureau of Reclamation requested $3,169,000 for the program for fiscal year 2001. We would like to see the program increased up to $5,000,000 so a greater amount of work can take place

with water districts for planning assistance and training on the development of water conservation plans and water efficient landscapes. The need for this type of training was one of the reasons NUAC was founded. Water Resource managers and policy makers are increasingly challenged by management issues. Paramount to making good management decisions is the availability of sound scientifically information. This information is an aid in the development of practical and environmentally sound programs which are both cost effective and socially responsible.

WATER MANAGEMENT AND CONSERVATION PROGRAM

On the surface this program appear to be a duplication of other Bureau of Reclamation assistance programs. The Bureau of Reclamation requested $7.6 million for this program for fiscal year 2001. One of the questions that has arisen in this program is whether the Bureau of Reclamation has construction authority for funds provided to districts under the program. This is an issue we would like the Committee to clear up so projects could go forward. We believe the funding requested is adequate, but if construction is going to occur under this program we would suggest a cap on the size of the project receiving such funding so it does not become a program for the few and not the many.

TECHNICAL ASSISTANCE TO THE STATES

NUAC is concerned with how this program has been cut by Congress over the past several years. We believe the data collection and analyses for management of water and related land resources that occurs with this funding is important in the absence of this country having a national water policy. We would ask that the request of $1.8 million not be cut, and if possible, the funding be increased to $3 million to help make up the shortfall that has occurred from previous cuts.

SOIL MOISTURE AND CONSERVATION

The modest amount of the Bureau of Reclamation's request of $263,000 makes this program appear unimportant. NUAC would like to see this increased by a modest amount to $500,000 but have that increase tied to assisting in the efforts from the recommendations of the final National Drought Policy Commission Report. We also believe this program should be examined to see if it couldn't assist in proper site management of Federally funded structures that are going to need water for their urban landscapes.

TITLE XVI—WATER RECLAMATION AND REUSE

NUAC is supportive of the funding that has been provided in the fiscal year 2001 request for the projects that are underway under the Title XVI program. The $22 million requested is substantially below the $33 million provided by Congress for fiscal year 2000 and we would request that you consider increasing the funding up to that level this year. The $1.4 million provide for research, new starts, and feasibility studies needs to be examined from the standpoint of how long it is going to take to fund the existing projects, instead of looking to increase the number of projects. We believe there is a need for a serious discussion among water policy leaders on how to fund the future of this program in a timely manner. With regard to research, we see this as an area for the private and public sector to move forward on their own without having Reclamation involved in the agenda. We believe Reclamation's money would be better spent in getting the existing projects built.

Thank you for the opportunity to provide testimony for the record on these programs.

MIDWEST U.S. WATER RESOURCE DEVELOPMENT PROJECTS

PREPRED STATEMENT OF THE METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

On behalf of the Metropolitan Water Reclamation District of Greater Chicago (District), I want to thank the Subcommittee for this opportunity to present our priorities for fiscal year 2001 and, at the same time, express our appreciation for your support of the District's projects in the years past. The District is the local sponsor for three Corps of Engineers priority projects of the Chicagoland Underflow Plan: the O'Hare, McCook and Thornton Reservoirs. We are requesting the Subcommittee's full support for McCook and Thornton Reservoirs, as the O'Hare Reservoir has been completed. Specifically, we request the Subcommittee to include a total of $19,000,000 in construction funding for the McCook and Thornton Reservoir projects

in the bill. The following text outlines these projects and the need for the requested funding. Also, attached is a booklet indicating the benefits of the project, the municipalities in our area which benefit from these projects, and the need for the requested funding. The booklet reviews the history of the issues involved, including newspaper articles and pertinent data from the U.S. Army Corps of Engineers (Corps) and the Illinois State Water Survey.

THE CHICAGOLAND UNDERFLOW PLAN

The Chicagoland Underflow Plan (CUP) consists of three reservoirs: the O'Hare, McCook and Thornton Reservoirs. The O'Hare Reservoir Project was fully authorized for construction in the Water Resources Development Act of 1986 (Public Law 99–662) and completed by the Corps in fiscal year 1999. This reservoir is connected to the existing O'Hare segment of the District's Tunnel and Reservoir Plan (TARP). Adopted in 1972, TARP was the result of a multi-agency effort, which included officials of the State of Illinois, County of Cook, City of Chicago, and the District.

TARP was designed to address the overwhelming water pollution and flooding problems of the Chicagoland combined sewer areas. These problems stem from the fact that the capacity of the area's waterways has been overburdened over the years and has become woefully inadequate in both hydraulic and assimilative capacities. These waterways are no longer able to carry away the combined sewer overflow discharges nor are they able to assimilate the pollution associated with these discharges. Severe basement flooding and polluted waterways (including Lake Michigan, which is the source of drinking water for millions of people) is the inevitable result. We point with pride to the fact that TARP was found to be the most cost-effective and socially and environmentally acceptable way for reducing these flooding and water pollution problems. Experience to date has reinforced such findings with respect to economics and efficiency.

The TARP plan calls for the construction of the new "underground rivers" beneath the area's waterways. The "underground rivers" would be tunnels up to 35 feet in diameter and 350 feet below the surface. To provide an outlet for these tunnels, reservoirs will be constructed at the end of the tunnel system. Approximately 93.4 miles of tunnels have been constructed or are under construction at a total cost of $2.1 billion and are operational. The tunnels capture the majority of the pollution load by capturing all of the small storms and the first flush of the large storms. Another 15.8 miles of tunnels costing $399 million need to be completed. The tunnels connected to the O'Hare Reservoir now discharge when they fill up during large rainstorms into the Reservoir and this system is working well and providing benefits. Thornton and McCook Reservoirs have not been built yet, so significant areas remain unprotected. Without these outlets, the local drainage has nowhere to go when large storms hit the area. Therefore, the combined stormwater and sewage backs up into over 470,000 homes. This is a reduction from the 550,000 homes impacted before the tunnels were put on line.

Since its inception, TARP has not only abated flooding and pollution in the Chicagoland area, but has helped to preserve the integrity of Lake Michigan. In the years prior to TARP, a major storm in the area would cause local sewers and interceptors to surcharge resulting in CSO spills into the Chicagoland waterways. Since these waterways have a limited capacity, major storms have caused them to reach dangerously high levels resulting in massive sewer backups into basements and causing multi-million dollar damage to property. To relieve the high levels in the waterways during major storms, the gates at Wilmette, O'Brien, and the Chicago River would be opened and the CSOs would be allowed to backflow into Lake Michigan. Since the implementation of TARP, some backflows to Lake Michigan have been eliminated.

In particular, since implementation of TARP, 358 billion gallons of CSOs have been captured by TARP, that otherwise would have reached waterways. After the completion of both phases of TARP, 99 percent of the CSO pollution will be eliminated. The elimination of CSOs will result in less water needed for flushing of Chicago's waterway system, making it available as drinking water to communities in Cook, DuPage, Lake, and Will counties, which have been on a waiting list. Specifically, since 1977, these counties received an increase of 162 mgd, partially as a result of the reduction in the District's discretionary diversion in 1980. Additional allotments of Lake Michigan water, beyond 1991, will be made to these communities, as more water becomes available from sources like direct diversion.

With new allocations of lake water, communities that previously did not get to share lake water are in the process of building, or have already built, water mains to accommodate their new source of drinking water. The new source of drinking water will be a substitute for the poorer quality well water previously used by these

communities. Partly due to TARP, it is estimated by IDOT that between 1981 and 2020, 283 mgd (439 cfs) of Lake Michigan water would be added to domestic consumption. This translates into approximately 2 million people that previously did not receive lake water, would be able to enjoy it. This new source of water supply will not only benefit its immediate receivers but will also result in an economic stimulus to the entire Chicagoland area, by providing a reliable source of good quality water supply.

THE MCCOOK AND THORNTON RESERVOIRS—CHICAGOLAND UNDERFLOW PLAN

The McCook and Thornton Reservoirs of the Chicagoland Underflow Plan (CUP) were fully authorized for construction in the Water Resources Development Act of 1988 (Public Law 100–676). The CUP, as previously discussed, is a flood protection plan that is designed to reduce basement and street flooding due to combined sewer back-ups and inadequate hydraulic capacity of the urban waterways. These projects are the second and third components of CUP, they consist of reservoirs to be constructed in west suburban Chicago and Thornton in south suburban Chicago.

These reservoirs will provide a storage capacity of 15.3 billion gallons and will produce annual benefits of $104 million. The total potential annual benefits of these projects are approximately twice as much as their total annual cost. The District, as the local sponsor, is acquiring the land necessary for these projects, and is to meeting its cost sharing obligations under Public Law 99–662.

These projects are a very sound investment with a high rate of return. They will enhance the quality of life, safety and the peace of mind of the residents of this region. The State of Illinois has endorsed these projects and has urged their implementation. In professional circles, these projects are hailed for their farsightedness, innovation, and benefits.

Based on two successive Presidentially-declared flood disasters in our area in 1986 and again in 1987 and dramatic flooding in the last several years, we believe the probability of this type of flood emergency occurring before implementation of the critical flood prevention measure is quite high. As the public agency for the greater Chicagoland area responsible for water pollution control, and as the regional sponsor for flood control, we have an obligation to protect the health and safety of our citizens. We are asking your support in helping us achieve this necessary and important goal of construction completion.

We have been very pleased that over the years the Subcommittee has seen fit to include critical levels of funds for these important projects. We were delighted to see the $4,500,000 in construction funds included in the Energy and Water Development Appropriations bill for fiscal year 2000. However, it is important that we receive a total of $19,000,000 in construction funds in fiscal year 2001 to maintain the commitment and accelerate these projects. This funding is critical to continue the construction of the McCook Reservoir on schedule, in particular, to complete construction of the slurry wall and to accelerate the design of the Thornton Reservoir. The community has waited long enough for protection and we need these funds now to move the project in construction. We respectfully request your consideration of our request.

SUMMARY

Our most significant recent flooding occurred on February 20, 1997, when almost four inches of rain fell on the greater Chicagoland area. Due to the frozen ground, almost all of the rainfall entered our combined sewers, causing sewerage back-ups throughout the area. When the existing TARP tunnels filled with approximately 1.2 billion gallons of sewage and runoff, the only remaining outlets for the sewers were our waterways. Between 9:00 p.m. and 3:00 a.m., the Chicago and Calumet Rivers rose six feet. For the first time since 1981 we had to open the locks at all three of the waterway control points; these include Wilmette, downtown Chicago, and Calumet. Approximately 4.2 billion gallons of combined sewage and stormwater had to be released directly into Lake Michigan.

Given our large regional jurisdiction and the severity of flooding in our area, the Corps was compelled to develop a plan that would complete the uniqueness of TARP and be large enough to accommodate the area we serve. With a combined sewer area of 375 square miles, consisting of the city of Chicago and 51 contiguous suburbs, there are 550,000 homes within our jurisdiction, which are subject to flooding at any time. The annual damages sustained exceed $150 million. If these projects were in place, these damages could be eliminated. We must consider the safety and peace of mind of the two million people who are affected as well as the disaster relief funds that will be saved when these projects are in place. As the public agency in the greater Chicagoland area responsible for water pollution control, and as the

regional sponsor for flood control, we have an obligation to protect the health and safety of our citizens. We are asking your support in helping us achieve this necessary and important goal. It is absolutely critical that the Corps' work, which has been proceeding for a number of years, now proceed on schedule through construction.

Therefore, we urgently request that a total of $19,000,000 in construction funds be made available in the fiscal year 2001 Energy and Water Development Appropriations Act to continue construction of the McCook and Thornton Reservoir Project.

Again, we thank the Subcommittee for its support of our project over the years and we thank you in advance for your consideration of our request this year.

PREPARED STATEMENT OF THE MISSOURI-ARKANSAS RIVER BASINS ASSOCIATION

Following is the list of projects with the money requested for the 2001 budget. They are endorsed by the Board of the Missouri-Arkansas Association. We ask your serious consideration in budget approval for the Federal fiscal year 2001.

	Requested fiscal year 2001 appropriation
Blue River Channel, Kansas City, Missouri. Continue Construction Stage 3. Complete Construction by 2003. This Project affects 10,000 workers in the Blue River Valley	$20,000,000
Turkey Creek, Kansas City, Kansas and Missouri. Complete Design for a Construction start in fiscal year 2002. Project authorized in 1998 WRDA Bill	500,000
Missouri River Levee System Restudy seven levees. Continue feasibility study	350,000
Dodson Industrial District—Blue River Basin. Need new construction start authorization in fiscal year 2001. (KC, MO's cost is about $5 Million)	150,000
Swope Park Industrial Area, Kansas City, Missouri. Start PED	200,000
Unit L–385. Continue Construction. Local sponsor now acquiring ROW	5,000,000
Unit L–142:	
Complete Design for Left Bank	500,000
Study start for right bank-Wears Creek	100,000
Total	26,800,000

The list has been prepared in order of priority, as supported by our Board. MO–ARK has a unique history of supporting only cost beneficial projects. Also, MO–ARK supports flood protection studies now under way for St. Joseph, MO; Topeka, KS; and the Upper Mississippi River Flow Frequency Study. We also support the Missouri River Fish and Wildlife Mitigation Project. Please place this testimony in the formal hearing record.

PREPARED STATEMENT OF AMERICAN RIVERS

Mr. Chairman and Members of the Appropriations Subcommittee on Energy and Water Development, on behalf of more than 450 conservation and recreation organizations, community groups, religious affiliations, companies, and other groups across the country, American Rivers would like to thank you for the opportunity to testify.

We urge you to increase funding for habitat restoration efforts by the U.S. Army Corps of Engineers, including Columbia River Fish Mitigation, the Environmental Management Program, the Section 1135 and Section 206 programs, the Challenge 21 Initiative, and the Missouri River Fish and Wildlife Mitigation Program.

No federal agency possesses as much restoration expertise as the Army Corps of Engineers. Across the nation, communities are working with the Corps to restore degraded rivers and streams to provide new opportunities for recreation and tourism, improve water quality, create habitat for river wildlife, and improve quality of life. The Corps is playing the lead role in hundreds of communities, ranging from the restoration of the Missouri River to the Anacostia River.

In particular, we urge you to support the following programs:

Columbia River Fish Mitigation.—We urge you to appropriate $95 million for the Columbia River Fish Mitigation program and specify that the money must be used for projects designed to recreate or mimic the natural river conditions salmon need to survive and leave fish in the river to benefit from these changes. The program

is essential to restoring runs of Snake River salmon and steelhead. Largely due to federal dams on the Columbia and Snake Rivers, every species of Snake River salmon and nearly every species of Columbia River salmon are listed under the Endangered Species Act. Restoring the salmon populations in the Snake River would be a significant boon to the local and regional economies. Congress should also eliminate funding for the Corps' failed collecting and barging activities and deny new Columbia River Fish Mitigation appropriations for additional screens, barges, and other related projects.

Section 1135 and Section 206.—We urge you to appropriate $25 million for the Section 1135 Program, which permits the Corps to modify projects to restore habitat. More than 30 projects have been completed since the program was authorized in 1986, including the restoration of wetlands, construction of islands, and reforestation of floodplains. We also urge you to appropriate $25 million for the Section 206 Program, which authorizes the Corps to restore degraded habitat regardless of past activities by the Corps.

Challenge 21 Initiative.—We urge you appropriate $40 million for the Challenge 21 Initiative, which will permit the Corps to relocate frequently flooded homes and businesses. Since the Great Flood of 1993, nearly 20,000 flooded homes and businesses have been relocated from harm's way. Challenge 21 will permit the Corps to relocate vulnerable structures before disaster strikes, reducing long-term flood losses.

Upper Mississippi River.—We urge you to appropriate $25 million for the Environmental Management Program, the primary habitat restoration program for the Upper Mississippi River. Unless habitat restoration efforts are accelerated, side channels and sloughs will continue to fill with sediment faster than they can be replaced, endangering the health of the nation's most biologically diverse river.

Missouri River.—We urge you to appropriate $15 million for the Missouri River Fish and Wildlife Mitigation Project, the primary habitat restoration program for the Lower Missouri River. Restoring a string of natural places from Sioux City and Saint Louis will aid river wildlife, attract recreation and tourism, and reduce flood losses.

Thank you for your consideration of our requests. We strongly believe that these funding levels will be excellent investments in the long-term health of the rivers, the communities they serve and the economies they sustain.

PREPARED STATEMENT OF THE INTEGRATED PETROLEUM ENVIRONMENTAL CONSORTIUM

The Integrated Petroleum Environmental Consortium (IPEC) is an environmental consortium of The University of Oklahoma, Oklahoma State University, The University of Tulsa, and The University of Arkansas at Fayetteville. Funded as an EPA Research Center, the mission of IPEC is to increase the competitiveness of the domestic petroleum industry through a reduction in the cost of compliance with U.S. environmental regulations. This mission is accomplished through a vigorous research and technology transfer program.

IPEC is industry driven to ensure that the consortium is meeting the needs of the industry and fulfilling its mission. IPEC is advised by an Industrial Advisory Board (IAB) composed of environmental professionals, state regulators, and independent operators who review all research proposals for relevancy to IPEC's mission. Representatives of regulatory bodies include the Oklahoma Corporation Commission, the Arkansas Oil and Gas Commission, the Arkansas Department of Pollution Control and Ecology, and the Pawhuska, OK office of the U.S. Environmental Protection Agency. The independent oil companies (producers and refiners) are the majority group represented on the IAB. This Board is dominated by the upstream independent sector of the industry. The responsibilities of the IAB are two-fold. First, the IAB advises the IPEC Executive Committee on environmental research needs in the domestic petroleum industry. Secondly, the IAB reviews research proposals at a pre-proposal stage for relevancy to the mission of IPEC. Research proposals must meet this test of relevancy to be considered further for funding. IPEC is also advised by a Science Advisory Committee (SAC), composed of leading environmental experts from academia and government laboratories, that reviews all research proposals for scientific quality.

IPEC's research program focuses on the development of cost-effective technologies to address environmental problems having the greatest economic impact on the domestic industry. Current research projects include the following: the use of plants to clean contaminated soils; the natural biodegradation of gasoline by microorganisms in the absence of oxygen; the beneficial use of petroleum wastes as road mate-

rials; the control of the formation of toxic hydrogen sulfide in oil wells; the development of simple sampling devices to replace expensive live organisms to assess toxicity in contaminated soils; the treatment and disposal of naturally occurring radioactive material (NORM) in oil production equipment; the remediation of brine-impacted soils; development of a sound scientific basis for ecological risk assemement of petroleum production sites; and enhancing the remediation of oil contaminated soils. These projects were first reviewed and approved by our IAB as relevant to our mission of increasing the competitiveness of the domestic petroleum industry and finally reviewed and approved by our SAC on the basis of scientific quality.

Since September, 1998 IPEC has provided $1,080,264 in funding for these projects. However, another $977,765 in funding for these projects has been secured by the investigators as matching funds from industry and industry organizations such as the Gas Research Institute, the American Petroleum Institute and the Petroleum Environmental Research Forum. This is over and above matching funds (over $900,000) provided by the Oklahoma State Reagents for Higher Education. IPEC is a true public/private partnership.

IPEC's technology transfer program is directed toward providing useful tools for environmental compliance and cost reduction to independent producers. The first year work plan, as developed jointly by the IPEC IAB and SAC, has two principal objectives. The first objective is to raise the level of technical training of the field inspectors of the oil and gas regulatory bodies of Oklahoma and Arkansas including the Oklahoma Corporation Commission, The Arkansas Oil and Gas Commission, and the Osage Agency of the Bureau of Indian Affairs with regard to first response to spills, pollution prevention, and remediation of oil and brine spills. The second objective of this program is the development of checklists for independent producers to assist them in environmental audits ("staying out of trouble checklists"), remediation of oil and brine spills, and first response to spills. Oklahoma and Arkansas regulatory field agents will be used to deliver these tools to the independent producers.

IPEC's technology transfer flagship is the International Petroleum Environmental Conference. In November, 1999 IPEC held the 6th International Petroleum Environmental Conference in Houston, TX. There were over 370 in attendance from all facets of the oil and gas industry including independent and major producers, service industry representatives, and state and federal regulators. The program for the 6th conference featured several plenary lectures, over 150 technical presentations, exhibits, a poster session and a special symposium on the promise of new technology in the oilfield. Co-sponsors of the conference included the Interstate Oil and Gas Compact Commission, the Railroad Commission of Texas, the Texas Independent Producers and Royalty Owners Association, the Gas Research Institute, the Oklahoma Independent Petroleum Association, the Oklahoma Energy Resources Board, the EPA Office of Research & Development, and the National Petroleum Technology Office of the U.S. Dept. of Energy. IPEC sponsors the participation of ten state regulators from Oklahoma and Arkansas each year at the conference. The 7th International Petroleum Environmental Conference will be held November 7–10, 2000, in Albuquerque, NM.

THE CRISIS IN THE DOMESTIC PETROLEUM INDUSTRY

Much attention has been paid recently to the high costs to consumers of gasoline and home-heating oil. The price of crude oil is the dominant influence on the costs of all petroleum products and the cost of crude oil has been increasing for the last 13 months. Energy experts agree that the price increases currently being experienced were brought on by short-term shocks that resulted from sudden changes in supply and demand. On the demand side there has been increasing demand for petroleum worldwide, especially in the Far East. On the supply side, OPEC and several non-OPEC countries have removed significant amounts of crude oil from production. Once again America has been held hostage to the marketing whims of foreign producers and we are in no position to respond. Since 1990 there has been a 27 percent decline in the number of jobs in the U.S. exploring and producing oil and gas. Ten years ago there were 657 working oil rigs in the U.S., now there are less than 175. Thirty-six refineries have closed since 1992 and no new refineries have been built since 1976.

In order to regain energy security the U.S. must have a coherent domestic energy strategy. Some may be willing to entrust the health of the U.S. economy to windmills and solar-powered cars, but it will be a stable and profitable domestic oil and gas industry that is the nation's best defense against OPEC market manipulations. The current upswing in crude oil prices may eventually stimulate the industry. However, the record low prices that preceded the current increases have left many

companies in financial positions that make it impossible to launch new exploration activities. Additionally, many in the industry are simply uneasy with the volatility that has come to characterize the industry. Much of U.S. domestic oil production is carried out by independent producers who are producing from mature fields left behind by the majors. Although there is a significant resource base in these fields, this is the most difficult and the most costly oil to produce. The independent producer has only one source of revenue—the sale of oil and gas. There is no vertical depth to his business.

A major factor in the high cost of production in the domestic petroleum industry is the cost of environmental compliance. IPEC is working to strengthen the domestic petroleum industry and reduce the impact of market volatility by providing cost-effective environmental technologies to solve those problems that are having the greatest impact on production costs. A strong and stable domestic petroleum industry is our best hedge against foreign market manipulation.

IPEC'S RESPONSE TO CRITICAL INDUSTRY NEEDS

IPEC is continually probing our Industrial Advisory Board for new ways to assist the domestic petroleum industry and continually seeking out cost-effective technical solutions to these problems through an aggressive proposal solicitation and review process. The IPEC IAB also advises the Consortium on technology transfer needs in the industry. An exciting idea that has been put forward by the IPEC IAB is the concept of the petroleum extension agent (PEA). The current appropriations request will fund a pilot PEA program in Oklahoma and Arkansas that can be expanded to include every oil and gas producing state or region.

There are over 3500 independent oil producers in Oklahoma and Arkansas. Most of these are very small companies, the "mom and pop" operations whose business is run from the pickup truck and the kitchen table. These small producers are especially vulnerable to industry volatility. The current crises in the domestic petroleum industry requires a multi-level response with a specific outreach effort to the smallest of the independents, those without in-house experts, to advise them on the latest production techniques to minimize costs; how to prevent spills and the accompanying clean-up costs; and how to comply with state and federal regulations to avoid fines and costly loss of production. This type of assistance is not currently provided by the private sector engineering and service companies because the small producers cannot afford private sector services of this kind.

IPEC proposes to provide these services to small independent producers through a system of petroleum extension agents (PEAs). Up to ten (10) full-time equivalent petroleum professionals will be hired to call on small independent producers throughout Oklahoma and Arkansas to provide direct assistance in every aspect of operating a profitable and environmentally friendly business as an oil producer. These PEAs will be seasoned veterans of oil and gas production in the state in which they will operate. PEAs will possess demonstrated technical competence and have a minimum of 20 years of experience in the industry. PEAs will operate from the major oil producing areas of the states.

PEA services will be made known to producers through advertisements and through field agents of the Oklahoma Corporation Commission and the Arkansas Oil and Gas Commission. PEAs will also seek out and call on small producers in the same way that county agricultural extension agents call on small farmers. PEAs will be required to serve at least 24 clients per year, spending an average of two weeks working with each small producer. This amount of time is needed to earn a producer's confidence, get to know their business, and demonstrate cost-saving ideas. In difficult situations PEAs will be able to draw on the significant resources of the IPEC institutions and the IPEC Industrial Advisory Board. The IPEC institutions contain many business and environmental resources, two departments of petroleum engineering, and many chemical and mechanical engineers engaged in oil and gas research. The IAB members also represent decades of experience in the oil and gas industry in Oklahoma and Arkansas. Representatives of the Oklahoma Corporation Commission and Arkansas Oil and Gas Commission are members of the IAB; therefore, in cases of conflict between small producers and one of these regulatory bodies, IPEC can also potentially serve to help resolve problems.

The results expected from this program are:

—a reduction in the costs of production and increased profitability among small independent producers,

—lesser numbers of small producers going out of business,

—less abandoned resources,

—greater state tax revenues and

—increased compliance with environmental regulations and greater protection of natural resources.

It is anticipated that 240 small producers will be directly assisted in the first year of this program. However, the knowledge gained by these producers will be passed on to other small producers and family members by word-of-mouth greatly expanding the reach of this direct mechanism of technology transfer to the industry.

FUNDING OF THE PETROLEUM EXTENSION AGENT PROGRAM

IPEC is seeking an appropriation of $1.5 million for fiscal year 2001 through the Department of Energy to fund a pilot petroleum extension agent program in Oklahoma and Arkansas. The Consortium will be subject to peer review to ensure the effective utilization of public funds in meeting the stated goals of the PEA program.

PREPARED STATEMENT OF THE GARRISON DIVERSION CONSERVANCY DISTRICT

Chairman Domenici and members of the Subcommittee: Over the years, Garrison Diversion Unit appropriations have been used to provide a reliable, high quality water supply to rural communities in need throughout North Dakota and to maintain the 120 miles of canals and pumping plants already in place.

The Garrison Diversion Project continues to be the backbone of all water projects in North Dakota. Completing Garrison Diversion will assure our citizens affordable access to an adequate quantity and quality water supply for municipal, rural and industrial systems. Garrison Diversion is the key for future economic development, recreation, tourism and wildlife enhancement in our state.

The President's budget request includes $21,291,000 for the Garrison Diversion Unit. An additional $4,200,000 is needed to continue the important work of the MR&I program and for needed modifications and repairs to the existing facilities. Additional appropriations will continue development of rural water supply systems across the state, providing a dependable water supply to North Dakota residents. This funding impacts the lives of families and business owners statewide who are working toward finding solutions to meet their water needs.

Meeting the Indian MR&I needs also concerns North Dakotans. The four Indian reservations in the state face some of the most severe water problems in North Dakota. Existing ceilings are exhausted and the unmet needs on the reservations are growing. Additional appropriations and an appropriate ceiling increase will allow tribal leaders to continue working on their most critical water needs. We understand that at least $3,000,000 in additional funding is desperately needed to continue this important program. We concur that this need is of the highest priority.

A greater concern is the overall Bureau of Reclamation budget. Current trends show this budget number shrinking on an annual basis. Additional funding and a redirection of the funding allowed for "water supply programs" is definitely needed. Although water conservation, water reuse and restoring fish and wildlife resources are important, the Bureau's budget needs to be refocused and increased to place more emphasis on completing the authorized projects already on the books.

We are hopeful that a mutual agreement concerning the Dakota Water Resources Act can be reached this year that is beneficial to all areas of interest. Since the bill reduces the cost of the currently authorized project, it will actually save the Federal Government money and, at the same time, meet the highest priority needs of the state.

Mr. Chairman, we fully support and appreciate the committee's current and past efforts in regard to funding for the Garrison Diversion Unit. Because water is a valuable resource in North Dakota, we are committed to finding solutions to our state's water needs.

PREPARED STATEMENT OF THE MNI WICONI PROJECT

FISCAL YEAR 2001 CONSTRUCTION BUDGET REQUEST

The Mni Wiconi Project beneficiaries (as listed below) respectfully request appropriations for construction in fiscal year 2001 for the project in the amount of $53,341,000 as follows:

Oglala Sioux Rural Water Supply System:	
Core Facilities (Treatment Plant, Pipelines)	$23,834,000
Distribution System on Pine Ridge	4,820,000
West River/Lyman-Jones Rural Water Systems	9,608,000
Rosebud Sioux Rural Water System	13,182,000

Lower Brule Sioux Rural Water System	1,897,000
Total Mni Wiconi Project	53,341,000

NEED FOR OSRWSS TO REACH MURDO IN FISCAL YEAR 2001—MAJOR MILESTONE

The Oglala, Lower Brule and Rosebud Sioux Tribes were consulted as required by the Indian Self-Determination Act (Public Law 93–638, as amended) when the Administration arrived at its fiscal year 2001 construction budget of $23.57 million for the Mni Wiconi Project. This budget, however, does not address the needs of the project in fiscal year 2001, a major target year, nor does it include the $15 million "Indian initiative" proposed by the Administration for the fiscal year 2001 budget but not included in it.

The principle element in the budget for fiscal year 2001 is $11.895 million for the Oglala Sioux Rural Water Supply System (OSRWSS) core. The OSRWSS core system funds are needed to complete the project to Murdo by November 2001, where water can be delivered to the largest areas of demand in the West River/Lyman-Jones service area and all of the Rosebud service area. By completing the project to Murdo, all of the interconnection points for the Lower Brule Sioux Tribe will also be provided. Only the Pine Ridge Indian Reservation and parts of West River/Lyman-Jones will be without points of interconnection to the OSRWSS core. This landmark in progress on the project in fiscal year 2001 is the most significant event in the project to date. The requested funding level is needed to achieve the objective.

Important to note is the fact that the intake and treatment plant on the Missouri River will be fully operational by February 2001 and will deliver water to Vivian where the Lower Brule Sioux Tribe is building a core facility that will permit interconnection by West River/Lyman-Jones.

Completion of the OSRWSS core pipeline system to Murdo is needed to take greater advantage of the completed intake and treatment plant. The funding request for fiscal year 2001 will permit us to conclude the necessary construction to Murdo, thereby providing interconnection to a population of 26,000, 50 percent of the project population. Absent sufficient funds in fiscal year 2001, only 8,000 persons will be provided with interconnection to the OSRWSS core to receive water from the Missouri River. Emphasis is placed on the importance of serving an additional 14,000 residents of the project in fiscal year 2001.

All proposed sponsor construction activity will build pipelines that will provide project water immediately to beneficiaries. In many cases, construction is ongoing, and fiscal year 2001 funds are required to complete those projects. In the absence of fiscal year 2001 funds requested for the distribution systems, it will be necessary to discontinue some on-going construction contracts and reinitiate them at a later time. This will raise project costs. It will also lower faith of contractors in the project, which will affect future bid prices.

Funding for OSRWSS core and distribution facilities are necessary to bring the benefits of the Empowerment Zone designation to the Pine Ridge Indian Reservation, one of five rural designations across the Nation. There is great anticipation on the Pine Ridge Indian Reservation. The federal projection that as much as $.5 to $1.0 billion in economic activity can be generated, however, is largely dependent on the timely completion of a water system, which depends on appropriations for this project.

Finally, all sponsors underscore the importance of the "Indian Initiative" proposed by the Administration for the fiscal year 2001 budget. The Indian initiative was the product of correspondence by the Indian sponsors with the Administration requesting an increase in the level of funding for the Mni Wiconi Project of $25 to $50 million. The Commissioner of Reclamation responded and proposed a $10 to $15 million Indian initiative during the fall of last year. The Office of Management and Budget corresponded on behalf of the President in November 1999 stating that serious consideration would be given to the initiative. The Indian sponsors listed a total of $42 million in projects on the Indian Reservations where planning is well advanced and the Indian sponsors have the capability to use the additional funds. The correspondence referenced here and the map showing the locations of proposed construction activities in the Indian initiative are included for review by the Subcommittee. The Indian initiative was supported by the South Dakota delegation and West River/Lyman-Jones but was not included in the Administration's budget. The initiative is needed by the Indian sponsors to complete distribution systems that will take advantage on the progress on the OSRWSS core and secondary core systems within each of the Indian Reservations.

UNIQUE NEEDS OF THIS PROJECT

Your consideration in this most important project, a project that brings hope, dignity and a spirit of cooperation between Indian and non-Indians, will be greatly appreciated. This subcommittee has provided us with considerable support for which we are grateful. This year the Administration has provided an inadequate budget. It is necesssary for the project to petition the subcommittee for the appropriate level of funding to build the OSRWSS core to Murdo by year 2001, a major accomplishment that will provide interconnections from the core system to nearly 50 percent of the project population or about 26,000 persons. It is also necessary to fund the Indian initiative.

In June of the past year, President Clinton visited the Pine Ridge Indian Reservation to underscore the severity of economic conditions and to promote the Administration's "New Market Initiative." Each year our testimony addresses the fact that the project beneficiaries, particularly the three Indian Reservations, have the lowest income levels in the Nation. The health risks to our people drinking unsafe water are compounded by reductions in health programs. We respectfully submit that our project is unique and that no other project in the Nation has greater human needs. Poverty in our service areas is consistently deeper than elsewhere in the Nation. Health effects of water borne diseases are consistently more prevalent than elsewhere in the Nation, due in part to (1) lack of adequate water in the home and (2) poor water quality where water is available. Higher incidences of impetigo, gastroenteritis, shigellosis, scabies and hepatitis-A are well documented on the Indian reservations of the Mni Wiconi Project area. At the beginning of the third millennium one cannot find a region in which social and economic conditions are as deplorable. These circumstances are summarized in Table 1. Mni Wiconi builds the dignity of many, not only though improvement of drinking water, but through employment and increased earnings during planning, construction, operation and maintenance. We urge the subcommittee to address the Administration's concepts for creating jobs and improving the quality of life on the Pine Ridge and other Indian reservations of the project area.

TABLE 1.—1990 BUREAU OF CENSUS ECONOMIC STATISTICS

Indian reservation/state	Per capital families below		
	Income (dollars)	Poverty level (percent)	Unemployment (percent)
Pine Ridge (Shannon County)	$3,029	59.6	32.7
Rosebud (Todd County)	4,005	54.4	27.3
Lower Brule (Lyman County)	4,679	45.0	15.7
State of South Dakota	10,661	11.6	4.2
National	14,420	10.0	6.3

Financial support for the Indian membership has already been subjected to drastic cuts in funding programs through the Bureau of Indian Affairs and through Welfare Reform. This project, progressing through the budget fighting efforts at the National level, was a source of strong hope that would off-set the loss of employment and income in other programs and provide for a healthier environment. Tribal leaders anticipate that Welfare Reform legislation and other budget cuts nation-wide will create a crisis for tribal government when tribal members move back to the reservations in order to survive. This movement has already started. Recent Census Bureau data indicate that the population of Shannon County (Pine Ridge Indian Reservation) increased over 21 percent between 1990 and 1997. The population of Todd County (Rosebud Indian Reservation) has increased over 11 percent in the same time period. Those population increases are greater than anticipated and will create water needs that will more than utilize the benefits of the Mni Wiconi Project Act. Public policy has resulted in accelerated population growth on the reservations. The Act mandates that:

> ". . . the United States has a trust responsibility to ensure that adequate and safe water supplies are available to meet the economic, environmental, water supply and public health needs of the Pine Ridge, Rosebud and Lower Brule Indian Reservations . . ."

Indian support for this project has not come easily because of the historical experience of broken commitments to the Indian people by the Federal Government. The

argument was that there is no hope and the Sioux Tribes would be used to build the non-Indian segments of the project and the Indian segments would linger to completion. These arguments have been overcome by better planning, an amended authorization and hard fought agreements among the parties. The Subcommittee is respectfully requested to take the steps necessary the complete the critical elements of the project proposed for fiscal year 2001.

The following sections describe the construction activity in each of the rural water systems.

OGLALA SIOUX RURAL WATER SUPPLY SYSTEM—DISTRIBUTION

Pine Ridge and parts of West River will be the last project sponsors to interconnect with the OSRWSS core to receive Missouri River water. With projects now designed and proceeding under construction award there are 932 services and 450 miles of distribution and service pipelines, down from earlier projections due to the pace of funding. We continue to extend the start of new projects. No new projects were bid in 1999, and 2001 funds are necessary to advance construction. The Manderson Loop has been under construction since fiscal year 1996, and the fifth of five phases will be scheduled for completion with fiscal year 2001 funds. The Red Shirt Project in the northwest corner of the Reservation is underway and is scheduled for completion in fiscal year 2001.

Of particular importance to the Oglala Sioux Tribe is the start of the main transmission system from the northeast corner of the Reservation to Kyle in the central part of the Reservation. We had proposed the "Indian initiative" as a means of advancing this project segment. The transmission line is needed to interconnect the OSRWSS core system with the distribution system within the Reservation in order to deliver Missouri River water to the populous portions of the Reservation. If adequate funds are available, this segment of the project cannot be initiated in fiscal year 2001. This critical component of the Oglala system has been deferred for the last three years due to inadequate funding although the design and easements have been completed on large portions of the project.

WEST RIVER/LYMAN-JONES RURAL WATER SYSTEM—DISTRIBUTION

Joint Mni Wiconi Sponsor focus on the core delivery systems has advanced the project to where WR/LJ is now able to provide significant development of quality water service to it's membership. All of the WR/LJ distribution system development to date has been dependent on temporary water supplies to meet critical water needs. Project water will be available when the intake and water treatment plant are fully operational in February 2001.

All of the WR/LJ construction activity is focused on construction of distribution facilities that will be served when the OSRWSS reaches Murdo in fiscal year 2001. The City of Murdo will no longer be infamous for it's poor quality water. The requested funding will provide quality water of all of our membership in Lyman County and the Eastern half of Jones County. It will provide fulfillment of the dream of founders of the original "Lyman-Jones" system over 35 years ago.

WR/LJ construction in Eastern Mellette County, in conjunction with RST core pipeline construction to meet the OSRWSS at Murdo, will make quality water service available to all rural residents, tribal and non-tribal, of Mellette County. This is another successful demonstration of the unique working relationship of the Mni Wiconi sponsors.

Delivery of water service in the rural area around Ft. Pierre will provide long awaited economic stimulus to that segment of the Mni Wiconi project. Ranch and residential improvements and new construction have been long delayed due to lack of potable water systems. Those members living closest to the water source may now realize benefits from the project.

ROSEBUD RURAL WATER SYSTEM

The Rosebud Sioux Tribe and their non-Indian neighbors in Mellette County have waited many years for a reliable source of high quality water. The planned arrival of the OSRWSS Core pipeline at Murdo means the wait is nearly over. The focus of the Rosebud Sioux Tribe's fiscal year 2001 work plan is to connect to the OSRWSS and bring Missouri River water from Murdo to the town of White River. The new work planned for fiscal year 2001 become the backbone for the Rosebud design population of 17,000 and will provide water immediately to 300 connections and 1,500 people on the Sicangu Mni Wiconi and 55 additional connections and 150 people served by West River/Lyman Jones.

If it were possible to identify one component of the Sicangu Mni Wiconi as being the most important, it would be the Murdo to White River Pipeline. This pipeline

will provide close to 3,000 gallons per minute of high quality water to the Indian and non-Indian people of Mellette County. In addition to providing high quality water to the people of eastern and northwestern Mellette County, the construction of the Murdo to White River Pipeline will also eliminate the need to supply portions of western Mellette County from the interim groundwater supplies. The new supply means that the groundwater supplies will be available to reduce the chronic water shortages experienced in the Antelope and Mission areas.

In addition to the Murdo to White River Pipeline, other projects prioritized for construction in fiscal year 2001 include completion of the St. Francis rural distribution system, and initiation of the Spring Creek and Black Pipe/Corn Creek Projects. The Spring Creek Project will provide storage for the community of Spring Creek and distribute water to nearby rural areas. The Black Pipe/Corn Creek Project will use project facilities completed in fiscal years 1999 and 2000 to distribute Missouri River water to the northwestern portion of Mellette County. This area is one of the driest in the state and where and when water is available, water quality is so poor it frequently isn't suitable for human consumption.

If the promise of bringing high quality water to all of Mellette County can be accomplished in 2001, people's dreams of the past thirty or more years will become reality. The Rosebud Sioux Tribe hopes Congress will turn this dream into reality and immeasurably improve the quality of life for Indians and non-Indians alike.

LOWER BRULE RURAL WATER SYSTEM—DISTRIBUTION

The Lower Brule new microfiltration water treatment plant is now in operation and water is being delivered to the communities of Lower Brule and West Brule, some scattered to Reservation housing sites and some to West River/Lyman-Jones (WR/LJ) system serving the town of Reliance and rural users in the Reliance area. The treatment plant is producing and delivering a safe, high quality water with a nominal capacity of 700 gallons per minute. While the final cost of this facility approaches $1,800,000 only $250,000 came from Mni Wiconi program funds. The Lower Brule Sioux Tribe contributed $300,000 in tribal funds and the balance came from various grant programs.

The West Brule to Reliance core system is complete, including the Medicine Butte 456,000 gallon ground storage reservoir. The Fort George Butte—County Road pipeline has been installed and is awaiting testing. This pipeline will be placed into service as soon as water can be obtained from the Oglala Sioux Rural Water Supply System (OSRWSS) core pipeline and will initially serve only West River/Lyman-Jones users until the on-Reservation distribution system can be constructed. The Vivian to Presho core line is scheduled for completion in fiscal year 2000 and can begin serving the City of Presho and rural water users of West River/Lyman-Jones as soon as water is available from the OSRWSS core pipeline at Vivian.

Lower Brule Rural Water System (LBRWS) has programmed the fiscal year 2001 funding for completion of the Presho to Kennebec core pipeline. This would serve the town of Kennebec and West River/Lyman-Jones area rural users. In the event adequate funds are available in fiscal year 2001, the core pipeline from Kennebec north to the Reservation boundary will be constructed. This line will initially serve only WR/LJ users until funds can be obtained to construct the on-Reservation distribution system.

In order to accomplish the above stated goals, LBRWS is requesting $1,846,000 in fiscal year 2001 funds. This amount would provide adequate funds to construct the Presho to Kennebec and the Kennebec north core lines. If funds are not adequate for both of these core lines, the Presho to Kennebec line will take priority, with a required funding level of $1,235,000.

LBRWS is continuing to commit its available funds to construction of off-Reservation core pipelines. As noted above, this will allow service to WR/LJ cities and rural users. LBRWS will use funds made available in subsequent years to fund construction of its on-Reservation distribution system to serve our users if its authorized cost ceiling is raised.

PREPARED STATEMENT OF THE MID-DAKOTA RURAL WATER PROJECT

FISCAL YEAR 2001 FUNDING REQUEST

First let me thank the Subcommittee for the opportunity to testify in support of the fiscal year 2001 appropriations for the Mid-Dakota Rural Water Project and for the Subcommittee's support. The Mid-Dakota Project is requesting $24 million in federal appropriations for fiscal year 2001. As with our past submissions to this subcommittee, Mid-Dakota's fiscal year 2001 request is based on a detailed analysis of

our ability to proceed with construction during the fiscal year. In all previous years, Mid-Dakota has fully obligated its appropriated funds, including federal, state, and local, and could have obligated significantly more were they available.

This year (fiscal year 2001) the project is seeking additional funds above the President's budget recommendation in the amount of $17.96 million ($24.0 million–$6.04 million). Mid-Dakota understands and appreciates pressures on Congress to pass and maintain a balanced and seemingly an austere budget and in that respect we understand the difficulties before congressional appropriators to find additional funds to supplement the President's budget request. However, we request and strongly urge Congress to appropriate the full amount of Mid-Dakota's request.

HISTORY OF PROJECT FUNDING:

The Project was authorized by Congress and signed into law by President George Bush in October 1992. The federal authorization for the project totaled $100 million (in 1989 dollars) in a combination of federal grant and loan funds (grant funds may not exceed 85 percent of federal contribution). The State authorization was for $8.4 million (in 1989 dollars). The total authorized indexed cost of the project now stands at approximately $144 million. All federal funding considered, the Government has provided 53.4 percent of its commitment ($71.4 million of $134 million) to provide construction funding for the Project. When considering the federal and state combined awards, the project is approximately 56.3 percent complete, in terms of financial commitments.

Mid-Dakota wishes to thank this committee for its support over the past seven years. Within the limited monetary parameters of current federal awards and funds appropriated by the State of South Dakota, we have been able to put those scarce resources to good work, making exceptional progress on project construction, albeit not nearly as fast as is needed or as we had initially envisioned.

SUMMARIZATION OF FEDERAL FUNDING

[In millions of dollars]

Fed. fiscal year	Mid-Dakota request	Pres. budget	House	Senate	Conf. enacted levels	Bureau award levels	Additional funds	Total fed. funds provided
1994	7.991	.....	.....	2.000	2.000	1.500	.....	1.500
1995	22.367	.....	.....	8.000	4.000	3.600	.....	3.600
1996	23.394	2.500	12.500	10.500	11.500	10.902	2.323	13.225
1997	29.686	2.500	11.500	12.500	10.000	9.400	1.500	10.900
1998	29.836	10.000	12.000	13.000	13.000	12.221	1.000	13.221
1999	32.150	10.000	10.000	20.000	15.000	14.100	2.000	16.100
1900	28.800	5.000	15.000	7.000	14.000	12.859	.....	12.859
2001	28.800	6.040	.....	.....	.....	.....	.....	
Totals	.....	36.040	61.000	73.000	69.500	64.582	6.823	71.40

Additionally, the State of South Dakota has contributed $9.67 million in grants to the Mid-Dakota Project, in previous years. The State of South Dakota completed its initial authorized financial obligation to the Mid-Dakota Project in the 1998 Legislative Session.

The $14 million funding provided by the Subcommittee in fiscal year 2000 provided Mid-Dakota with the opportunity to achieve very significant and exciting accomplishments for the fiscal year. These are later summarized in the section titled "Construction in Progress." Mid-Dakota will continue to deliver quality drinking water to nine community systems and approximately 800 rural customers (farms and Ranches). Mid-Dakota estimates that an additional 1,000 rural farm and ranch accounts along with five more community systems will be receiving project water at the close of contracts awarded in fiscal year 1999/2000. The subcommittee's generosity has already had a deep and favorable effect on over 10,000 South Dakotans.

PRESIDENT'S FISCAL YEAR 2001 BUDGET REQUEST

In February the President's Budget recommendations to Congress were released. Mid-Dakota Rural Water was included in the proposed budget at a level of $6.040 million for fiscal year 2001. This represents a 57 percent decrease from what Congress appropriated in fiscal year 2000. The Mid-Dakota Project will not be able to

make any significant progress in fiscal year 2001 at this level of funding. In fact, it would not be an overstatement to say that Mid-Dakota may have to suspend significant construction activities for fiscal year 2001, if the $6.040 million is not significantly increased.

As in previous years, Mid-Dakota is in "catch-up" mode, due to lower than expected appropriations in prior years. The $24 million request for fiscal year 2001 will help the project maintain an acceptable construction schedule. The $6.040 million budget request by President Clinton would have profound and devastating effects, pushing the completion of the Project to the year 2013. Under the Clinton Administration's proposal, thousands of South Dakota citizens will be forced to wait an estimated 12 years until they can be connected to the Mid-Dakota Project. The President's budget, if ultimately implemented will provide an extended delay of Project benefits.

By its actions the Administration raises the potential of increasing the total cost of the Mid-Dakota Project by approximately $8 million. The Federal Government would not be alone in absorbing negative impacts of funding shortfalls. In addition to making the Mid-Dakota Project more expensive to the Federal Government, the resulting delays would also have a direct and proportional effect on the rate of debt service to be paid by the Project and ultimately the water users. The repayment agreement entered into by Mid-Dakota and the Federal Government (the Bureau of Reclamation acting on the Government's behalf), demands that Mid-Dakota's "minimum bill" increase proportionally with the indexing applied to the Project. This is done by establishing the ratio of the federal authorization at the time Mid-Dakota submitted its Final Engineering Report (FER) in 1994, compared to the authorized ceiling today with indexing applied. This same ratio is then applied to Mid-Dakota's "minimum bill" as was identified at the time of execution of the repayment agreement.

By the Bureau of Reclamation's own design, slowing down the development of the Mid-Dakota Project will ultimately make the Project more expensive, in terms of; rates paid by water users construction costs, total debt of the Project and Reclamation's oversight costs.

IMPACTS OF AWARD

The most obvious impact of any significant reduction from Mid-Dakota's request will be the delay of construction of one or more Project components. The $24 million dollar request will allow the Project to proceed with construction of multiple contracts summarized later in this testimony. An award of less than our request will result in the deletion or reconfiguration of one or more of these contracts from the fiscal year 2001 construction schedule. Further, reduced appropriations have the effect of adding more cost to the amount needed for completion of the Project.

Mid-Dakota has consistently informed members of Congress and appropriate federal agencies, about the detrimental effects insufficient funding has on the Project and ultimately the people who are to receive the water. In previous years Mid-Dakota and the public, which we will serve, have been able to make the most of the resources provided the Project. However, failure to provide full funding has had profound consequences.

CONSTRUCTION IN PROGRESS

Mid-Dakota began construction in September of 1994, with the construction of its Water Intake and Pump Station. Since that eventful day of first construction start, we have bid, awarded, and completed 14 project components and are into construction on six other major Project components. The following table provides a synopsis of each major construction contract:

Cont. no.	Description	Cont. budget [1]	Cont. bid award	Final cont. price	Over (under) budget	Percent over (under) budget
1–1	Oahe Water Intake and Pump Station	4.662	3.959	3.945	(0.717)	(15)
2–1	Oahe Water Treatment Plant	13.361	9.920	10.278	(3.083)	(23)
3–1A	Raw Water Pipeline	1.352	1.738	1.719	0.367	27
3–1B	Main Pipeline to Blunt, SD	7.823	6.916	7.024	(0.799)	(10)
3–1C	Main Pipeline to Highmore, SD	5.439	4.791	4.798	(0.641)	(12)
3–2A	Main Pipeline to Ree Hights, SD	3.261	3.155	3.149	(0.112)	(3)
3–2B	Main Pipeline to St. Lawrence, SD	3.691	3.349	3.352	(0.339)	(9)
4–1A/B (1–5)	Rural Service Area Contract	9.345	9.983	10.731	[2] 1.386	15
4–1A/B (6)	Rural Service Area Contract	8.333	8.329	8.573	[2] 0.240	3

Cont. no.	Description	Cont. budget [1]	Cont. bid award	Final cont. price	Over (under) budget	Percent over (under) budget
5–1	Highmore Water Storage Tank	1.545	1.434	1.433	(0.108)	(7)
5–1A (1)	Onida Water Storage Tank	0.471	0.395	0.400	(0.075)	(16)
5–1A (2)	Okobojo Water Storage Tank	0.381	0.338	0.338	(0.043)	(11)
5–1A (3)	Agar Water Storage Tank	0.422	0.391	0.393	(0.029)	(7)
5–1A (4)	Gettysburg Water Storage Tank	0.952	0.814	0.815	(0.137)	(14)
Totals		61.038	55.512	56.948	(4.090)	(7)

[1] Contract budget is determined by Mid-Dakota's estimate for the contract at the time of bidding.
[2] A significant portion of the cost increases are attributable to the placement of additional users as construction proceeds.

As is evident by the foregoing table, Mid-Dakota has been very successful in containing Project costs. Currently the construction of major Project components are approximately 7 percent under budget, providing an estimated saving of over $4 million. The savings are an example of sound engineering, good management and advantageous bid lettings. While we can't guarantee future contract bid lettings will continue to provide the level of savings currently experienced, we do think it speaks well of the Mid-Dakota Project and how we've managed Project funding to date.

Mid-Dakota also provided the solution to a number of emergency situations in the past. The "rescue" effort to the City of Gettysburg, SD provided the town with a dependable, quality water supply (Mid-Dakota) just as they were about to lose their existing water intake, due to sluffing of the hillside at that location. The town of Virgil, SD will have a new distribution system for the town, replacing the old one that was in disrepair and draining the town coffers to keep it running and supply drinking water to Virgil residents. Mid-Dakota has agreed to take-over the operations of the Southern Spink and Northern Beadle Rural Water System (SSNB). SSNB is a small community water supply system that lacks the necessary capacity to properly operate a potable water supply system. Mid-Dakota replaced approximately eight miles of pipeline along U.S. Highway 212. An existing water pipeline located in the Highway right-of-way would have to be relocated increasing the cost of the Highway improvement. Mid-Dakota instead placed its pipeline (that would have been constructed in the future) out of the way of the Highway improvement. This lessened the cost of the Highway project and provided for an uninterrupted supply of water along the pipeline route.

Additionally, Mid-Dakota is keeping in close contact with the City of Huron, SD (population 12,400) regarding potentially serious EPA water quality violations anticipated with the implementation of the Safe Drinking Water Act (SDWA) enhanced surface water rules due in 2003. Engineers who have analyzed the current drinking water source for Huron (James River) have concluded that the City will not be able to treat the current James River source without very significant and costly upgrades to their existing treatment facilities. Further the engineers have concluded that without these upgrades or switching to a new source i.e., Mid-Dakota, the City will be out of compliance with the Disinfection and Disinfection byproducts rule D/DBP to be implemented in 2003. Huron is located at the East end of the Mid-Dakota Project (Mid-Dakota is being built in a general West to East manner) and is currently Mid-Dakota's largest contracted user. It is anticipated that with sufficient funding beginning with fiscal year 2001 and continuing thereon, Mid-Dakota can be in a position to connect to Huron in time to remedy potential EPA non-compliance faced by Huron.

TENTATIVE FISCAL YEAR 2001 CONSTRUCTION SCHEDULE [1]

Mid-Dakota has developed an aggressive construction schedule for fiscal year 2001, with plans to install nearly 900 miles of pipeline to serve an estimated 3,000 more people than are currently receiving or scheduled to receive Project drinking water. Our construction schedule will also provide the necessary main pipeline infrastructure to move forward with many more rural and community connections in the future. Federal funding allocated in any given fiscal year is always the limiting factor that drives Mid-Dakota's construction schedule.

[1] Project features listed in table are subject to rescheduling based upon funding provided and readiness to proceed and other factors. Actual construction activities, therefore, may not coincide exactly with schedule presented here.

CONSTRUCTION SCHEDULE—FISCAL YEAR 2001

	Construction estimate	4 percent Inspection & ROW estimate	9 percent Construction contract management	Total project estimate
Rezac Lake Service Area	$3,033,000	$121,320	$272,970	$3,427,290
Collin's Slough Service Area	2,195,000	87,800	197,550	2,480,350
Ames Service Area	3,515,000	140,600	316,350	3,971,950
Cottonwood Lake Service Area	3,698,000	147,920	332,820	4,178,740
Wessington Springs Service Area	2,667,000	106,680	240,030	3,013,710
Redfield Service Area	488,000	19,520	43,920	551,440
Subtotal Service Areas	15,596,000	623,840	1,403,640	17,623,480
Ames Water Storage Tank	474,000	18,960	56,880	549,840
Cottonwood Lake Storage Tank	495,000	19,800	59,400	574,200
Wessington Springs Storage Tank	499,000	19,960	59,880	78,840
Redfield Storage Tank	187,000	7,480	22,440	216,920
Subtotal Storage Tanks	1,655,000	66,200	198,600	1,919,800
Engineering, Design & Consultants				1,000,000
Administration & General (Approx 3.5 percent of Const.)				675,000
Contingencies and Other (Approx. 15 percent of Const.)				2,825,000
Total fiscal year 2001				24,043,280
Total fiscal year 2001 request				24,000,000

Note: 1. Completion of a "Service Area" must include the accompanying Water Storage Tank in order to place the area in service.
2. Construction Projects outlined above are not necessarily in an order of priority.
3. Contingencies include 5 percent (bidding) 5 percent (Change Orders) & 5 percent (Add-on users).

CLOSING

Mid-Dakota is intensely aware of the difficult funding decisions that face the Energy and Water Appropriations Subcommittee and we do not envy the difficult job that lies ahead. We strongly urge, the Subcommittee to look closely at the Mid-Dakota Project and recognize the dire need that exists. Consider the exceptionally high level of local and state support. And lastly our readiness, our credibility and our ability, to proceed.

Again, we thank the Subcommittee for its strong support in the past.

PREPARED STATEMENT OF THE MISSOURI RIVER BANK STABILIZATION ASSOCIATION

The Missouri River Bank Stabilization Association, its members and its officers thank you for the opportunity to present this statement, including a budget request, relating to the budget for fiscal year 2001.

This statement relates to the Missouri National Recreational River project which was authorized by the Congress in 1978 per Section 707 of Public Law 95–625. The Association's budget request for fiscal year 2001 is $275,000.00, an amount to be used for these purposes.

—The operation, maintenance and repair of structures constructed prior to 1978 under the authority of Section 32 of the Streambank Erosion Control and Demonstration Act;

—To provide for the repair or replacement of flood-damaged facilities which permitted access to the river in the lower reaches of the project, especially on the South Dakota shore;

—For the acquisition of shoreline easements to protect extant wildlife habitat and to increase such habitat where it is lacking;

—To provide streambank protection where needed, as needed, for the river's "high banks", ie., for the meander line's streambanks.
—For such other needs as may be required to achieve the Congressional purposes with respect to this project.

This project pertains to the some fifty-eight mile reach of the Missouri River extending downward from near Yankton, South Dakota, circa mile 811, to the Ponca, Nebraska, State Park, circa mile 752. This reach of the Missouri is the only relatively wild portion lying downstream of the "main stem" dams. Here, the Missouri is neither channelized nor stabilized. While limited and isolated stabilization structures do exist, for the most part the river retains its natural characteristics. These characteristics include eroding shorelines, islands, ephemeral sandbars, trees overhanging the water, frequent changes in the channel, marked differences in depth, forested bluffs, caving cornfields and somewhat limited access. Wildlife, too, characterizes this reach of river. Deer, coyotes, raccoons and beaver abound, as do a wide variety of birds. Spring and fall see a massive influx of ducks, geese and many other migratory birds.

The business of the Missouri River is to move the Rocky Mountains to the Gulf of Mexico. Erosion is a major tool employed by the Missouri to perform its role as a 2,300 plus mile conveyor belt. Thus, its shorelines are under endless attack, including even those areas where some stabilization measures have been undertaken. The erosion problem was exacerbated by the record high flows in 1997; some of the damage done then has yet to be repaired. Further aggravating the problem is the river's increased capacity to carry sediment because the water released through the Gavins Point Dam is almost sediment free. Thus, the river can and does cut with a vengeance.

While intensive erosion has long been one of the Missouri's salient characteristics, the problem here is that the construction of the "main stem" dams ended the annual overbank flooding. Such flooding naturally created new land along the river, balancing the erosion. The flood plain along the river was so created. Today, no flooding occurs along this reach of river, and landowners suffer doubly: erosion has increased because of the increased carrying capacity of the clean water and such erosion is not offset by floodcreated floodplains. Whereas riparian landowners once had a "fifty-fifty" chance of regaining lost land, today they have no chance of such restorations. Instead, they have a one hundred percent chance of losing their land.

Congress authorized $21,000,000.00 for this project. To date only some $2 million has been spent. A new management plan for this reach of river was recently approved. The National Park Service and the U.S. Army Corps of Engineers, aided by a "citizens advisory group" developed the new plan. The new plan is more detailed than the original; it contains an array of proposals designed to increase public enjoyment of this delightful reach of the "old" Missouri. This plan also seeks to preserve and protect those characteristics which make this reach of the Missouri worthy of the status the Congress bestowed upon it.

During the very lengthy process of developing the new plan, it was time and again noted that bank stabilization was a truly essential component of the plan and one authorized by the enabling legislation. Indeed, if there be no stabilization to protect existing (and endangered) features of the river and its landscape, they will simply disappear. For example, extant tracts of superb cottonwood forests are being eroded away as this is written. Such losses are irretrievable. Disturbingly, the new plan is vague and all but silent as to stabilization; indeed the press release heralding adoption of the new plan did not even mention it. At the public meetings held to seek public input to help develop the new plan, the need for stabilization was overwhelmingly the principal need articulated.

Underscoring this request for needed funding for this reach of the "old Missouri" is the accelerating interest in the nearing bicentennial of the Lewis and Clark Expedition. As this reach of the Missouri is one of but a handful of surviving natural reaches, it is certain to be among the most attractive to the multitude of people who will follow the Lewis and Clark Trail. Public access needs to be improved; more and better signage is imperative; some increase in overlooks, or other viewing points, is certainly desirable. Such public access will be of little interest to a visitor unless the islands, forested shorelines, wildlife habitats and sandbars are preserved and protected.

The Association is most appreciative of the continued interest and support the Congress has shown, and extends its thanks accordingly. So, too, do a host of hunters, environmentalists, fishermen, boatsmen and a variety of others who support our cause and enjoy the Grand Old Stream we seek to protect and preserve.

PREPARED STATEMENT OF THE LITTLE RIVER DRAINAGE DISTRICT

My name is Dr. Sam Hunter, DVM of Sikeston, Missouri. I am a veterinarian, landowner, farmer and resident of Southeast Missouri.

I am the President of the Little River Drainage District, the largest such entity in the nation. Our District serves as an outlet drainage and flood control District to parts of seven counties in Southeast Missouri. We provide flood control protection to a sizable area of Northeast Arkansas as well. Our District is solely tax supported by more than 3500 private landowners in Southeast Missouri.

Our District as well as other Drainage and Levee Districts in Missouri and Arkansas is located within the St. Francis River Basin. This is a project item of the Mississippi River and Tributaries Project.

The St. Francis Basin Project was authorized by Congress in 1928 for improvements by the U. S. Army Corps of Engineers. The initial authorization was justified by a projected benefit cost ratio of 2.4: 1. Today this ratio is 3.6: 1 and the project is still not completed. As you can see this has been a wise investment of our federal tax dollars. Few projects or ventures with funding levels provided by the Federal Government return more than they cost. This one does and we need to complete it in a timely fashion.

Local interests have done their part in providing rights of way, roads, utilities and the like. Our government now needs to fulfill their part of the project and bring it to completion as quickly as possible.

The St. Francis Basin project has had a base funding level of approximately $10,000,000 over the past several years. Our last five year average has been $9.9 million. That baseline funding level does not need to be diminished. The President's budget request of $6,775,000 is not acceptable. The amount requested by OMB will not provide sufficient funding levels for the Corps to maintain what they have built and/or improved. We hereby respectively request funds for fiscal year 2001 for this project of $12,775,000. This amount is compatible with the Corps of Engineers capability.

Since the initiation of the project for improvements we have seen many positive changes occur such as:

—Many miles of all weather roads have been constructed and are usable almost daily each year.
—Better flood control and drainage.
—Development of one of the most fertile and diversified valleys in the world.
—Growth of towns, schools, churches, industry, commerce, and etc.
—Improvement of our environment: malaria, typhoid and other such diseases are no longer the norm but seldom occur.
—A future for our young people to have a desire to remain in the area.
—Production of a variety of food and fiber products.

As you can see many changes have occurred and we who live there welcome them fully. We, local interests, in Southeast Missouri and Northeast Arkansas want this project brought to completion and adequately maintained. We have waited over seventy years and we believe it is now time to complete a wise investment for our nation.

Our request to you today is to approve funding for the St. Francis Basin at $12,775,000 for fiscal year 2001 and succeeding years to assure completion of the project and to make certain the completed project is properly maintained.

Further, we are here as a member of the Mississippi Valley Flood Control Association, which represents similar interests as our District, from the Gulf of Mexico upstream to the headwaters of the Mississippi River.

The MR&T Project has only $309,000,000 in the President's budget. The Corps of Engineers has the capability of $370,000,000. We ask you to give consideration to provide funding levels at $370,000,000 for this project for fiscal year 2001. This will provide some new construction but it will also provide the necessary maintenance monies needed each year.

Our great Mississippi River and Tributaries are most valuable assets to our great nation. The barge industry is the safest, most efficient and more environmentally acceptable than our other modes of moving our commodities to be exported. We need to upgrade our infrastructure now in order to compete with foreign markets. The $370,000,000 will provide funding for some new construction and maintenance funds for existing features. We have numerous locks and dams which need to be improved to accommodate our twenty first century needs. Some locks and dams are more than fifty years old.

Thank you very much for your kind attention. We would be very appreciative of anything this Committee can do to help us meet our needs.

PREPARED STATEMENT OF THE ARKANSAS RIVER BASIN INTERSTATE COMMITTEE

Mr. Chairman and members of this distinguished Committee, my name is Wallace Gieringer. I am retired as Executive Director of the Pine Bluff-Jefferson County (Arkansas) Port Authority. It is my honor to serve as Chairman of the Arkansas River Basin Interstate Committee, members of which are appointed by the governors of the great States of Arkansas, Colorado, Kansas, Missouri, and Oklahoma.

As Chairman, I present this summary testimony as a compilation of the most important projects from each of the member states. Each of the states unanimously supports these projects without reservation. I request that the copies of each state's individual statement be made a part of the record, along with this testimony.

Mr. Chairman, the members of the Interstate Committee continue to identify as our top priority a project vital to the five-state area and beyond—the urgently needed Montgomery Point Lock and Dam at the confluence of the McClellan-Kerr Arkansas River Navigation System and the Mississippi River.

Continuing problems caused by lowering of the Mississippi River plague McClellan-Kerr entrance channel users. As recently as last month shippers on the McClellan-Kerr were threatened with the lowest water levels on the Mississippi River in recorded history.

Construction of Montgomery Point needs to continue as rapidly as possible before limited dredge disposal areas become inadequate. During times of low water on the Mississippi River the entrance channel is drained of navigable water depth. As the Mississippi River bottom continues to lower, the McClellan-Kerr moves toward total shutdown.

Thus, the entire Arkansas River Navigation System is at risk, and its long term-viability is threatened without Montgomery Point. Some $5 billion in federal and private investments, thousands of jobs, growing exports in world trade and future economic development are endangered.

The good news is that you, your associates, the Congress and the Administration have all recognized the urgency of constructing Montgomery Point!

The Corps of Engineers awarded a $186 million construction contract on July 19, 1977. Last year Congress appropriated $45 million to continue construction of the lock and dam. The cofferdam and diversion channel have been completed, and work is progressing well.

Mr. Chairman and Members of the Committee, continuing Congressional support is essential at this crucial time in the history of the project. An appropriation of $45 million for fiscal year 2001 will insure that Montgomery Point is in operation as soon as possible at the lowest possible cost.

The Interstate Committee also respectfully recommends the following as important priorities:

Providing $1.4 million for the Arkansas River Navigation Study, AR & OK. While navigation is the primary purpose of the McClellan-Kerr Arkansas River Navigation System, navigation needs and flood control are closely related. Sustained high flows result in difficult navigation conditions and continued flooding in the vicinity of Fort Smith, Arkansas.

As the operation of the flood control features of the Navigation System in that area are based on the Van Buren, Arkansas gage, the flooding concerns and navigation problems are interrelated. Accordingly, this study would address the navigation System Operating Plan to improve navigation conditions on the river, as well as the performance of flood control measures, especially in the Fort Smith reach.

We strongly urge the Committee to provide funding in the amount of $2.5 million to initiate the installation of tow haulage equipment on the 3 locks on the Arkansas River portion of the McClellan-Kerr Arkansas River Navigation System in Oklahoma.

Equus Beds Groundwater Recharge Project—this is the continuation of a Bureau of Reclamation project jointly endorsed by the City of Wichita, Groundwater Management District No. 2 and the State of Kansas. This model technology has proven the feasibility of providing needed environmental protection and recharging a major groundwater aquifer supplying water to nearly 600,000 irrigation, municipal and industrial users. Governor Graves supports this much needed project in order to secure the quality of life and economic future for more than 20 percent of the state's population.

Demonstration project data confirms earlier engineering models that the full scale project is feasible and also capable of meeting the increasing water resource needs of the area to the mid 21st century. Through the recharge project, a greater reliance on the aquifer is planned for the future and essential environmental protection strategies must be implemented.

The full scale design concept calls for a multi-year construction project. Phase One of the project is estimated to cost $14.6 million with construction beginning in mid-2001. The total project involving the capture and recharge of more than 100 million gallons of water per day is estimated to cost $142 million over 10 years. We are grateful for your consistent, previous cost share funding support since fiscal year 1995 as a compliment to funds provided by the City of Wichita. We request continued cost share funding for Phase One of the full-scale project in the amount of $5.84 million for fiscal year 2001.

We also request funds for the Bureau of Reclamation in the amount of $6.861 million for the Upper Colorado River Endangered Fish Recovery and San Juan River Basin Recovery Implementation Programs.

Mr. Chairman, Members of this Committee, we respectfully request that you and members of your staff review and respond in a positive way to the attached individual statements from each of our states which set forth specific requests pertaining to those states.

We sincerely appreciate your consideration and assistance. Thank you very much for the foresight, wisdom and resourcefulness you and your colleagues demonstrate each and every year in providing solutions to our nation's water resource problems.

SUMMARY STATEMENT

Mr. Chairman and members of the Committee, we are grateful that you, your associates, the Congress and the Administration have all recognized the urgency of Constructing Montgomery Point Lock and Dam on the McClellan-Kerr Arkansas River Navigation System. Continuing Congressional support is essential. We respectfully urge the Congress to appropriate $45 million for use in fiscal year 2001 to continue construction and insure that the urgently needed facility is in operation as soon as possible at the lowest possible cost.

Other projects are also vital to the environment, social and economic well-being of our region and our nation. We request your support for the following:

—Provide $1,300,000 for the Arkansas River Navigation Study, AR & OK. This study would address the Navigation System Operating Plan to improve navigation conditions during high flows on the river, as well as the performance of flood control measures, especially in the Fort Smith reach.

—Support continued funding for the construction, and Operation and Maintenance of the McClellan-Kerr Arkansas River Navigation System.

—Continue construction authority for the McClellan-Kerr Arkansas River Navigation Project until remaining channel stabilization problems identified by the Little Rock District Corps of Engineers have been resolved.

—Provide funding and direct the Corps to complete installation of tow-haulage equipment for all the locks and dams on the McClellan-Kerr Arkansas River Navigation System.

—Provide funds and direct the Corps of Engineers to begin construction of the Arkansas River Levees Project as authorized by Section 110 of the Water Resource Development Act of 1990.

—$1.3 million needs be specifically provided and the Corps directed to begin rehabilitation construction on the Plum Bayou Levee (including the Old River and Baucum Levees).

—Funds for repair and rehabilitation of the power units at the Ozark-Jetta Taylor Lock and Dam Powerhouse which first went into operation in 1970.

—Provide funding in the amount of $500,000 to continue pre-construction engineering and design on the North Little Rock, (Dark Hollow), AR, project.

—Provide funding in the amount of $1,845,000 to complete Fourche Bayou Basin, Little Rock, AR, project.

Please help prevent a crisis for the Arkansas River Navigation System and the multi-state region it serves by appropriating $45 million for use in fiscal year 2001 for Montgomery Point Lock and Dam.

We fully endorse the statement presented to you today by the Chairman of the Arkansas River Basin Interstate Committee.

ARKANSAS RIVER BASIN FOR FISCAL YEAR 2001

Mr. Chairman and members of the Committee, thank you for the opportunity to present testimony to this most important committee. I am retired as Executive Director of the Pine Bluff-Jefferson County Port Authority and serve as Arkansas Chairman for the Interstate Committee. Other committee members representing Arkansas, in whose behalf this statement is made, are Messrs. Wayne Bennett, soybean and rice farmer from Lonoke; Colonel Charles D. Maynard, U.S. Army, retired, from Little Rock; Barry McKuin, a Director of the Morrilton Port Authority at

Morrilton; and N. M. "Buck" Shell, transportation specialist of Fort Smith and Van Buren, Arkansas.

1999 was a memorable year in the history of the McClellan-Kerr Arkansas River Navigation System—and you helped make it so! Last year Congress continued to recognize the urgent need for Montgomery Point Lock and Dam by appropriating $45 million. This much needed facility is under construction near the confluence of the McClellan-Kerr System and the Mississippi River. To each of you, your staff and the Congress—our most heartfelt thanks!

The Corps of Engineers awarded a $186 million contract for construction of the lock and dam proper on July 19, 1997. The cofferdam and the diversion channel have been completed, and work is progressing well. When completed, Montgomery Point will protect over $5 billion in public and private investments, thousands of jobs and world trade created as a result of the McClellan-Kerr Arkansas River Navigation System. Without Montgomery Point Lock and Dam the future of our wonderful navigation system remains threatened. Time is of the essence.

As recently as last month shippers on the McClellan-Kerr were threatened with the lowest water levels on the Mississippi River in recorded history. As the Mississippi experiences low water levels, and its bottom continues to lower, the McClellan-Kerr moves toward total shutdown. Existing dredge disposal areas are virtually full. Ongoing dredging and disposal of material can mean environmental damage. Construction must continue as rapidly as possible if the project is to be in place before disposal areas become inadequate.

Use of the temporary by-pass channel increases navigation hazards making it imperative that work on the lock and dam be completed as quickly and as safely as possible. The absence of Montgomery Point Lock and Dam continues to deter economic growth along the entire McClellan-Kerr and the project is certainly time sensitive!

We are very grateful that you, your associates, the Congress, and the Administration have all recognized the urgency of constructing Montgomery Point. Appropriations of $138.3 million have been made to date for engineering, site acquisition and construction for this project which should be completed in 2003 according to the Corps' optimum construction schedule.

Mr. Chairman and Members of the Committee, continuing Congressional support is essential at this crucial time in the history of the project. We respectfully request and urge the Congress to appropriate $45 million for use in fiscal year 2001 to continue construction. Adequate funding will insure that the urgently needed facility is in operation as soon as possible at the lowest possible cost.

We wish to express thanks Mr. Chairman, for the Committee's support of funding for the Morgan Bendway Environmental Restoration Project. The State of Arkansas provided one-fourth of the cost for this $3.3 million project which includes a 1000 acre lake and wetland restoration measures. This project adds to the many widespread public benefits associated with the McClellan-Kerr Arkansas River Navigation System.

We are also grateful for your support by funding completion of the repair and rehabilitation of the power units at the Dardanelle Lock and Dam which first went into operation in 1965. After this work is completed, power output will be increased by 13 percent and thus increase income to the Federal Treasury.

Other projects are vital to the environment, social and economic well-being of our region and our nation. We recognize the importance of continued construction of needed features to the McClellan-Kerr Arkansas River Navigation System and strongly recommend that you favorably consider the following in your deliberations:

—Provide $1,300,000 for the Arkansas River Navigation Study, AR & OK. While navigation is the primary purpose of the McClellan-Kerr Arkansas River Navigation System, navigation needs and flood control are closely related. Sustained high flows result in difficult navigation conditions and continued flooding in the vicinity of Fort Smith, Arkansas. As the operation of the flood control features of the Navigation System in that area are based on the Van Buren, Arkansas gage, the flooding concerns and navigation problems are interrelated. Accordingly, this study would address the navigation System Operating Plan to improve navigation conditions on the river, as well as the performance of flood control measures, especially in the Fort Smith reach.

—Support continued funding for the construction, and Operation and Maintenance of the McClellan-Kerr Arkansas River Navigation System.

—Continue construction authority for the McClellan-Kerr Arkansas River Navigation Project until remaining channel stabilization problems identified by the Little Rock District Corps of Engineers have been resolved. It is vitally important that the Corps continue engineering studies to develop a permanent solution to the threat of cutoffs developing in the lower reaches of the navigation system;

and for the Corps to construct these measures under the existing construction authority.

—Provide funding and direct the Corps to complete installation of tow haulage equipment for all the locks and dams on the McClellan-Kerr Arkansas River Navigation System. This efficiency feature will reduce lockage time by as much as 50 percent while permitting tonnage to double in each tow with only a minor increase in operating cost.

—Provide funds and direct the Corps of Engineers to begin construction of the Arkansas River Levees Project as authorized by Section 110 of the Water Resource Development Act of 1990. $400,000 is needed to continue planning, engineering and design for these levees which have been previously studied in the cost-shared Arkansas River, Arkansas and Oklahoma Feasibility Study.

—$1.3 million needs be specifically provided and the Corps directed to begin rehabilitation construction on the Plum Bayou Levee (includes the Old River and Baucum Levees).

Funds for repair and rehabilitation of the power units at the Ozark-Jetta Taylor Lock and Dam Powerhouse which first went into operation in 1970. This project is vitally needed to correct problems which have plagued the slant axis turbines since they were first put in operation and to continue the reliable production of power from this facility.

—Provide funding in the amount of $500,000 to continue pre-construction engineering and design on the North LittleRock, (Dark Hollow), AR Project.

—Provide funding in the amount of $1,845,000 to complete Fourche Bayou Basin, Little Rock, AR, project. This will allow the U.S. Army Corps of Engineers to cost-share with the City of Little Rock on purchase of 1,750 acres of bottomland hardwood for environmental preservation and establishment of nature appreciation facilities.

We also urge the Congress to continue to encourage the Military Traffic Management Command to identify opportunities to accelerate use of the nation's navigable waterways to move military cargoes thereby helping contain the nation's defense costs.

In conclusion, Mr. Chairman, please help prevent a crisis for the Arkansas River Navigation System and the multi-state region it serves by appropriating $45 million for use in fiscal year 2001 for Montgomery Point Lock and Dam.

The entire Arkansas River Navigation System is at risk, and its long-term viability is threatened. The system remains at risk until Montgomery Point is constructed. Some $5 billion in federal and private investments and thousands of jobs and growing exports are endangered.

We fully endorse the statement presented to you today by the Chairman of the Arkansas River Basin Interstate Committee. We appreciate the opportunity to provide testimony to your most important subcommittee and urge you to favorably consider our request for needed infrastructure investments in the natural and transportation resources of our nation.

PREPARED STATEMENT OF THE SOUTHEASTERN COLORADO WATER CONSERVANCY DISTRICT

SUMMARY STATEMENT

Mr. Chairman and Members of the Appropriations Subcommittee on Energy and Water Development, thank you for the opportunity to present this summary of the funding requests that are important to the State of Colorado and the membership of the Arkansas River Basin Interstate Committee. This committee comes together each year to support the water resource projects that are important to each of the 5 member states individually and collectively.

The State of Colorado joins the other members of the Committee in supporting as the number 1 priority project this year, Montgomery Point Lock and Dam at Montgomery Point, Arkansas. This vital navigation project is important to the many customers of Colorado that take advantage of the low cost water transportation of their goods. We urge you to fund this project at the requested $45 million. This will allow the project to remain on its current construction schedule for completion at the lowest possible cost.

The following requests for funding are in support of projects that are vital to the State of Colorado and we respectfully urge you fund them in the requested amounts.

Upper Colorado River Endangered Fish Recovery Program:

—Support Fish and Wildlife Service funding for the Recovery Program—$635,800.

—Support Fish and Wildlife Service funds for operation of the Ouray National Fish Hatchery—$305,800.

San Juan River Basin Recovery Implementation Program:

—Support Fish and Wildlife Service funding for the Recovery Program—$126,500.

Bureau of Reclamation funds for the Upper Colorado River Endangered Fish Recovery and San Juan River Basin Recovery Implementation Programs—$6.861 million.

Mr. Chairman, Members of this Committee, we thank you for your kind attention in the matters listed here and in the combined testimony's of the member states of the Arkansas River Basin Interstate Committee. We certainly look forward to your favorable response to these requests.

STATEMENT

Mr. Chairman and Members of the Appropriations Subcommittee on Energy and Water Development, thank you for the opportunity to present these comments and requests on behalf of Colorado as a participant in the Arkansas River Basin Interstate Committee.

First let me voice my support for the Interstate Committee's priority funding request for the fiscal year 2001 budget cycle. The Committee has once again identified the Montgomery Point Lock and Dam project as the number one funding request. Since there are many identifiable customers of the navigation system located in Colorado, we urge you to appropriate the requested $45 million to keep this project on its current construction schedule. This will allow the system to return to a reliable, year-round transportation system at the lowest possible cost.

Upper Colorado River Endangered Fish Recovery Program/San Juan River Basin Recovery Implementation Program—fiscal year 2001 Requests.—Mr. Chairman, Members of the Committee, we respectfully request funding for the following:

Fish and Wildlife Service Budget

Upper Colorado River Endangered Fish Recovery Program

—*Support Fish and Wildlife Service funding for the Recovery Program*.—$635,800 requested in "Recovery funds." Projects to be funded are:

Fish and Wildlife Service program management.—Funding to cover salaries and expenses of Program Director and staff.

Interagency standardized monitoring program.—This activity supports Service participation in monitoring fish populations (including stocked fish) and their responses to recovery actions.

Data management.—The Service maintains all fish data collected in the Recovery Program in computerized form to facilitate analyses. This includes maintaining the overall database, summarizing data, and providing an annual listing of all tagged fish.

—*Support Fish and Wildlife Service funds for operation of the Ouray National Fish Hatchery*.—$305,800 is requested for "Fish Hatchery Operation."

The Upper Colorado River Endangered Fish Recovery Program requests Congressional support to operate the Service's National Fish Hatchery in Ouray, Utah. Funding will enable the hatchery to continue to raise and hold endangered fish for stocking, research, and refugia (adult fish for spawning and maintaining gene pool.)

San Juan River Basin Recovery Implementation Program

—*Support Fish and Wildlife Service funding for the Recovery Program*.—$126,500 requested in "Recovery funds." Projects to be funded are:

Fish and Wildlife Service program management.—Funding supports partial salary for the coordinator and, funding permitting, dollars for research and monitoring. Bureau of Reclamation Budget

Support Bureau of Reclamation funds for the Upper Colorado River Endangered Fish Recovery and San Juan River Basin Recovery Implementation Programs.

Upper Colorado River and San Juan River Basin Recovery Program participants request Congressional support for $6.861 million for fiscal year 2001 in "Endangered Species Recovery Programs and Activities for the Upper Colorado Region." This amount is included in the Administration's proposed fiscal year 2001 budget for Reclamation. It would provide the Upper Colorado River Endangered Fish Recovery Program (Recovery Program) with $4.887 million, the San Juan River Basin Recovery Program with $1.394 million and Activities to Avoid Jeopardy with $535,000. It also includes a request of $45.000 to fund research associated with the habitat needs of the Kanab Amber Snail. The $4.887 million would be used for water acquisition and capital construction projects including:

Upper Colorado River Endangered Fish Recovery Program Activities

Fish passage.—Reclamation funds will be used to construct a fish ladder on the Colorado River at the Grand Valley Project. This activity will benefit razorback sucker and Colorado pike minnow by giving them access to more of their historic habitat.

Water acquisition.—Reclamation initiatives include:

Modification and automation of canals to more efficiently operate irrigation projects near Grand Junction, Colorado, and dedicating the "saved" water to endangered fish.

Using water stored in several smaller Reclamation reservoirs to enhance late-summer flows in the Colorado River.

Coordinating Federal and private reservoir operations in the Colorado River headwaters to enhance spring peak flows downstream.

Floodplain restoration.—Funding is needed in fiscal year 2001 to continue land acquisition, levee removal, and other floodplain restoration activities at high priority sites. Restoring these floodplains is thought to be especially important for endangered razorback suckers and will benefit a variety of wetland-dependent wildlife.

Endangered fish growout ponds.—Existing hatcheries and native fish production facilities fall short of meeting stocking needs. Funding is needed in fiscal year 2001 to excavate or locate at least 100 acres of growout ponds to raise razorback suckers and other endangered fish for further stocking in the Green, Colorado, and Gunnison Rivers.

Diversion canal screening.—Funding is needed in fiscal year 2001 to construct a screen at the Grand Valley Irrigation Company Diversion Canal to prevent endangered fish from being drawn out of the river and into the canals. (The habitat above the diversion is used by adult endangered fish.) Funding in the amount of $2,110,000 is also needed to construct a screen at the Tusher Wash Diversion Canal to prevent fish from being entrained into irrigation canals and the power plant.

San Juan River Basin Recovery Implementation Program Activities

The Biology Committee is developing a long-term capital facilities plan. The most likely capital expenditures for fiscal year 2001 will be to provide fish passage at Hogback and Cudei diversion dams in New Mexico and planning and design of passage structures at other locations on the San Juan River. Current maintenance of the Hogback Diversion structure requires extensive annual use of heavy equipment in the stream channel to rebuild the structure after spring flood events. Funding will be used to reconstruct a fortified diversion structure that incorporates a fish passage channel into the design. The Cudei diversion is a rock and earthen structure that impedes the ability of fish to move upstream and will be removed and replaced with a siphon that does not block the stream channel.

Upper Colorado River Endangered Fish Recovery Program-Authorizing Legislation.—The House and Senate will soon deliberate on legislation that will formalize the "recovery program" for the endangered fish in the upper Colorado River. The Upper Colorado River Endangered Fish Recovery Program (the Program) has been operating for several years with the support of the State of Colorado and the other Upper Basin States, as well as water users in these states. The Program is directed at recovering four native fish species while allowing water development activities to continue. To date the Program has served as the reasonable and prudent alternative (RPA) for several small water development projects throughout the Upper Basin States. In December of 1999 the U.S. Fish and Wildlife Service issued a final Programmatic Biological Opinion (PBO) that clearly establishes the intent of the Program to provide the RPA for all existing water projects and a reasonable measure of future water projects, while affirming commitment for a set of recovery action items that are intended to recover the fish.

It is important that the Upper Colorado River Endangered Fish Recovery Program be authorized so that the Program's objectives can be met. The House of Representatives has introduced H.R. 2348 and the Senate will soon follow with legislation that will provide authorization for the Program.

As a Colorado member of the Interstate Committee, I respectfully request that the individual members on this Subcommittee support the authorizing legislation for the Upper Colorado River Endangered Fish Recovery Program.

Thank you for your consideration of these requests.

PREPARED STATEMENT OF THE KANSAS ARKANSAS RIVER BASIN INTERSTATE COMMITTEE

SUMMARY STATEMENT

The critical water resource projects in the Kansas portion of the Arkansas River Basin are summarized below. The projects are safety, environmental and conservation oriented. In addition, we state our unanimous support for the fiscal year 2001 request of $45 million for continued construction of the authorized Montgomery Point Lock and Dam Project to maintain viable navigation for commerce on the McClellan-Kerr Navigation System.

We request your continued support for these important Bureau of Reclamation projects:

—*Equus Beds Groundwater Recharge Project*.—Continuation of a City of Wichita, Groundwater Management District No. 2 and State of Kansas project to construct recharge facilities for a major groundwater resource supplying water to more than 20 percent of Kansas municipal, industrial and irrigation users. The total project will capture and recharge in excess of 100 million gallons per day and will also reduce on-going degradation of the existing groundwater quality by minimizing migration of saline water. Continued federal funding is requested in the amount of $5.84 million for fiscal year 2001.

—*Cheney Reservoir*.—On the North Fork of the Ninnescah River providing natural treatment of inflows in the upper reaches of Cheney Reservoir to control poor water quality due to non-point source pollution from agricultural runoff. Continued funding in the amount of $125,000 is requested for fiscal year 2001.

We request your support of these equally important Corps of Engineers projects:

—*Arkansas City, Kansas Flood Protection*.—To protect homes and businesses from catastrophic damages resulting from either Walnut River or Arkansas River flooding. Previous funding is appreciated and continued federal funding is requested in the amount of $5.1 million for fiscal year 2001, the level needed by the Corps of Engineers.

—*John Redmond Reservoir Reallocation Study*.—To ascertain the equitable distribution of sediment storage between conservation and flood control storage and evaluate the environmental impact of the reallocation. Funding is requested in the amount of $345,000.

—*Upper Arkansas River Watershed, Kansas, Reconnaissance Study*.—$100,000 study to evaluate high flow carrying capacity, flood control and ecosystem restoration in western Kansas.

—*Grand Lake Feasibility Study*.—Corps study completed in September 1998, which evaluated the adequacy of federal flood control easements around Grand Lake. Feasibility study now requested in the amount of $3 million.

—*Grand (Neosho) Basin Watershed Reconnaissance Study*.—To evaluate nonstructural measures to reduce flood damages in southeastern Kansas and northeastern Oklahoma. Funding request is for $100,000.

—*Continuing Authorities Program*.—Several smaller Kansas communities have previously requested funding from the Small Flood Control Projects Program and the Emergency Streambank Stabilization Program. We request funding to be authorized at the full programmatic limits.

Finally, we are very grateful that both the Corps of Engineers and Bureau of Reclamation have the expertise needed for the development and protection of water resources infrastructure. It is essential to have the integrity and continuity these agencies provide on major public projects. Your continued support of these vital agencies, including funding, will be appreciated.

STATEMENT

Mr. Chairman and members of the committee, I am Gerald H. Holman, Senior Vice President of the Wichita Area Chamber of Commerce, Wichita, Kansas and Chairman of the Kansas Interstate Committee for the Arkansas Basin Development Association (ABDA). I also serve as Chairman of ABDA. This statement is submitted on behalf of the entire Kansas Delegation.

We are honored to join with our colleagues from the States of Oklahoma, Arkansas, Colorado, and Missouri to form the five state Arkansas River Basin Interstate Committee. We are unified as a region and fully endorse the statement of the Arkansas River Basin Interstate Committee.

In addition to the important projects listed below, we state our unanimous support for the continued construction of the authorized Montgomery Point Lock and Dam Project to maintain viable navigation for commerce on the McClellan-Kerr Navigation System. This inland waterway is vital to the economic health of our

area. Likewise, your support is vital to maintain its future viability. Construction is well underway and continued funding authorization is needed. We state our unanimous support for the $45 million needed by the Corps of Engineers for fiscal year 2001 to maintain the most economical and cost efficient construction schedule.

The critical water resources projects in the Kansas portion of the Arkansas River Basin have been reviewed by the Kansas delegation. The projects are safety, environmental and conservation oriented and all have regional and/or multi-state impact. We are grateful for your past commitment and respectfully request your continued commitment.

We ask for your continued support for these important Bureau of Reclamation projects on behalf of the Wichita/South Central Kansas area:

Equus Beds Groundwater Recharge Project.—This is the continuation of a Bureau of Reclamation project jointly endorsed by the City of Wichita, Groundwater Management District No. 2 and the State of Kansas. This model technology has proven the feasibility of recharging a major groundwater aquifer supplying water to nearly 600,000 irrigation, municipal and industrial users. The demonstration project remains fully operational, capturing flood flows from the Little Arkansas River providing water for use during times of low rainfall or dry conditions and also reducing on-going degradation of the existing groundwater quality by minimizing migration of saline water.

Demonstration project data confirms earlier engineering models that the full scale project is feasible and also capable of meeting the increasing water resource needs of the area to the mid 21st century. Presently, the Equus Beds provides approximately half of the Wichita regional municipal water supply and is vital to the surrounding agricultural economy. Through the recharge project, a greater reliance on the aquifer is planned for the future and essential environmental protection strategies must be implemented.

Governor Graves supports this much needed project in order to secure the quality of life and economic future for more than 20 percent of the state's population.

The full scale design concept calls for a multi-year construction project. Phase One of the project is estimated to cost $14.6 million. Construction is planned to begin in mid-2001. The total project involving the capture and recharge of more than 100 million gallons of water per day is estimated to cost $142 million over 10 years. All interested parties fully support this project as the needed cornerstone for the area agricultural economy and for the economy of the Wichita metropolitan area.

We are grateful for your consistent, previous cost share funding support since fiscal year 1995 as a compliment to funds provided by the City of Wichita. We request continued cost share funding for Phase One of the full-scale project in the amount of $5,840,000 for fiscal year 2001.

Cheney Reservoir.—The reservoir provides approximately 50 percent of Wichita's regional water supply. Two environmental problems threaten the water quality and longevity of the reservoir. One is sedimentation from soil erosion and the other is non-point source pollution, particularly the amount of phosphates entering the reservoir resulting in offensive taste and odor problems. A partnership between farmers, ranchers and the City of Wichita has proven beneficial in implementing soil conservation practices and to better manage and therefore reduce and/or eliminate non-point source pollution. To date, over 1,700 environmental projects have been completed within the 543,000 acre watershed. This partnership must continue indefinitely to protect the reservoir and the Wichita regional water supply and therefore, on-going funding will also be necessary. The City of Wichita is providing funding for this critical, nationally acclaimed model project. We request continued federal funding in the amount of $125,000 for fiscal year 2001. As the funding from Section 319 of the Clean Water Act is phased out, we request another funding source in the amount of $125,000 to continue this vital program.

Many of our agricultural communities have historically experienced major flood disasters, some of which have resulted in multi-state hardships involving portions of the State of Oklahoma. The flood of 1998 emphasized again the need to rapidly move needed projects to completion. Our small communities do not have the necessary funds or engineering expertise. Federal support is needed. Projects in addition to local protection are also important. This Committee has given its previous support to Kansas Corps of Engineers projects. We request your continued support for the projects listed below:

—*Arkansas City, Kansas Flood Protection*.—Unfortunately, this project was not completed prior to the flood of 1998. The flood demonstrated again the critical need to protect the environment, homes and businesses from catastrophic damages from either Walnut River or Arkansas River flooding. When the project is complete, damage in a multi-county area will be eliminated and benefits to the State of Oklahoma just a few miles south will also result. The Secretary of the

Army was authorized to construct the project in fiscal year 1997. We request your continued federal support in the amount of $5.1 million for fiscal year 2001, the level needed by the Corps of Engineers.

—*John Redmond Reservoir Reallocation Study*.—John Redmond Reservoir remains a primary source of water supply for many small communities in Kansas. It is suffering loss of capacity ahead of its design rate because of excessive deposits within the conservation pool. The flood pool remains above its design capacity. A study would ascertain the equitable distribution of sediment storage between conservation and flood control storages and also evaluate the environmental impact of the appropriate reallocation. Funding requirements for the Corps of Engineers study is $345,000. We request your support.

—*Upper Arkansas River Watershed, Kansas, Reconnaissance Study*—A reconnaissance study of the water resources problems from the Colorado-Kansas border to the vicinity of Great Bend, Kansas. The Federal construction of John Martin Dam, CO, combined with years of over-pumping of groundwater and over-use of surface water by agricultural interests in the upper reaches of the basin have changed the upper Arkansas River Basin flow regime. The changes resulted in minimal and non-existent flows in the upper Arkansas River in Kansas, which allowed vegetative and other encroachments into the river channel to occur largely unnoticed. Due to an agreement between Kansas and Colorado, there are now periods of increased flows in the Arkansas River in Kansas. State of Kansas officials are now concerned that the Arkansas River channel capacity has been so modified as to cause flooding in areas which have not previously experienced flooding problems. The study will evaluate the watershed changes to determine if flood damage prevention, watershed and ecosystem restoration or other solutions to water resource problems in the basin is warranted. We request funding to initiate reconnaissance studies in the amount of $100,000 for fiscal year 2001.

—*Grand Lake Feasibility Study*.A need exists to evaluate water resource problems in the Grand-Neosho River basin in Kansas and Oklahoma to evaluate solutions to upstream flooding problems associated with the adequacy of existing real estate easements necessary for flood control operations of Grand Lake, Oklahoma. A study authorized by the Water Resources Development Act of 1996 was completed in September of 1998 and determined that if the project were constructed based on current criteria, additional easements would be required. A Feasibility study is necessary to determine the most cost-effective solution to the real estate inadequacies. Changes in the operations of the project or other upstream changes could have a significant impact on flood control, hydropower, and navigation operations in the Grand (Neosho) River system and on the Arkansas River basin system, as well. We request funding in the amount of $3 million in fiscal year 2001 to fully fund Feasibility studies evaluating solutions to upstream flooding associated with existing easements necessary for flood control operations of Grand Lake.

Grand (Neosho) Basin Watershed Reconnaissance Study.—A need exists for a basin-wide water resource planning effort in the Grand-Neosho River basin, apart from the issues associated with Grand Lake, Oklahoma. The reconnaissance study would focus on the evaluation of institutional measures which could assist communities, landowners, and other interests in southeastern Kansas and northeastern Oklahoma in the development of non-structural measures to reduce flood damages. We request funding in the amount of $100,000 in fiscal year 2001 to conduct the study.

Continuing Authorities Program.—We support funding of needed programs including the Small Flood Control Projects Program (Section 205 of the 1948 Flood Control Act, as amended) as well as the Emergency Streambank Stabilization Program (Section 14 of the 1946 Flood Control Act, as amended). Smaller communities in Kansas (Iola, Liberal, Medicine Lodge, Iola, McPherson, Augusta, Parsons, Altoona and Coffeyville) have previously requested assistance from the Corps of Engineers under these programs. We urge you to support these programs to the $40 million programmatic limit for the Small Flood Control Projects Program and $15 million for the Emergency Streambank Stabilization Program.

Also, Ecosystem Restoration Programs are relatively new programs which offer the Corps of Engineers a unique opportunity to work to restore valuable habitat, wetlands, and other important environmental features which previously could not be considered. We urge you to support section 1135 of the Water Resources Development Act of 1986 and Section 206 of the Water Resources Development Act of 1996 at their $25 million programmatic limits.

Likewise, the Challenge 21 Program has the possibility of providing great assistance to communities which have experienced disastrous flood events like took place

in Kansas with the flood of 1998. The Challenge 21 program will focus on opportunities to move homes and businesses from harms way through structural and nonstructural measures and through comprehensive watershed planning efforts. We support funding of this important initiative.

Finally, we are very grateful that both the Corps of Engineers and Bureau of Reclamation have the expertise needed for the development and protection of water resources infrastructure. It is essential to have the integrity and continuity these agencies provide on major public projects. Your continued support of these vital agencies, including funding, will be appreciated. Our infrastructure must be maintained and where needed, enhanced for the future.

Mr. Chairman and Members of this Committee, we thank you for the dedicated manner in which you and your colleagues have dealt with the Water Resources Programs and for allowing us to present our needs and funding requests.

Thank you very much.

PREPARED STATEMENT OF THE OKLAHOMA ARKANSAS RIVER BASIN INTERSTATE COMMITTEE

SUMMARY STATEMENT

The water resource needs for the State of Oklahoma have been carefully reviewed and the following accurately represents the needs of the citizens of our region.

We continue to hold as our number on priority the continued construction of Montgomery Point Lock and Dam in Arkansas. The completion of this project is critical to the continued use of the navigation system and the continued growth of the entire region. We request an appropriation of $45 million for fiscal year 2001.

We strongly urge the Committee to provide funding in the amount of $2.5 million to initiate the installation of tow haulage equipment on the 3 locks and dams on the Arkansas River portion of the McClellan-Kerr Arkansas River Navigation System in Oklahoma.

The Arkansas River System Operations Feasibility Study, Arkansas and Oklahoma. This study would optimize the reservoirs in Oklahoma and Arkansas that provide flows into the river with a view toward improving the number of days per year that the navigation system will accommodate tows. We request funding in the amount of $1.4 million, to continue the study in fiscal year 2001.

We request the Committee to provide funding for the following studies:

—Illinois River Watershed Reconnaissance Study, $100,000.
—Grand (Neosho) Basin Reconnaissance Study, $100,000.
—Grand Lake Feasibility Study, $3 million.
—Lake Tenkiller Reallocation Study, $500,000.
—Wister Lake Reallocation Study, $450,000.
—Oologah Lake Water Quality Study, $515,000.

We also urge the Committee to provide adequate funding for the following Programs:

—Section 205, Small Flood Control Projects Program, $40 million, program limit.
—Section 14, Emergency Streambank Stabilization Program, $15 million, program limit.
—Sections 1135 and 206, Ecosystem Restoration Programs and Flood Plain Management Services Program, $25 million each, program limits.

On a related matter, we have deep concerns about the attempt to re-authorize the Endangered Species Act without significant beneficial reforms. We strongly urge you to take a hard look at any bill concerning this re-authorization and insure that it contains reasonable and meaningful reforms.

STATEMENT

Mr. Chairman and members of the committee, I am James M. Hewgley, Jr., Oklahoma Chairman of the Arkansas River Basin Interstate Committee, from Tulsa, Oklahoma.

It is my privilege to present this statement on behalf of the Oklahoma Members of our committee in support of adequate funding for water resource development projects in our area of the Arkansas River Basin. Other members of the Committee are: Mr. Ted Coombes, Tulsa; Mr. Edwin L. Gage, Muskogee; Mr. Terry McDonald, Tulsa; and Mr. Lew Meibergen, Enid.

Together with representatives of the other Arkansas River Basin states, we fully endorse the statement presented to you by the Chairman of the Arkansas River

Basin Interstate Committee. We appreciated the opportunity to present our views of the special needs of our States concerning several studies and projects.

Montgomery Point Lock and Dam—Montgomery Point Arkansas.—As we have testified for the past several years, we are once again requesting adequate appropriations to continue construction of this most important and much needed project. The shippers and users of the McClellan-Kerr Arkansas River Navigation System were seriously threatened in February of this year with the lowest flows in recorded history, at Memphis, on the Mississippi River. This again demonstrates the absolute need for completion of this critical project as such an event will drain the navigation water from the 10 mile White River Entrance Channel to the McClellan-Kerr System.

We respectfully request the Congress to appropriate $45 million in the fiscal year 2001 budget cycle to continue construction on the current project schedule. This will help insure the project is completed and in operation in a timely manner at the lowest possible cost.

Mr. Chairman, it is my pleasure to point out to this distinguished Committee that this navigation system has brought low cost water transportation to Oklahoma, Arkansas and the surrounding states. There has been over $5 billion invested in the construction and development of the McClellan-Kerr Arkansas River Navigation system by the Federal Government and the public and private sector, resulting in the creation of over 50,000 jobs in this partnered project.

Tow Haulage Equipment—Oklahoma.—We also request funding of $2.5 million to initiate the installation of tow haulage equipment on the locks located along the Arkansas River Portion of the McClellan-Kerr Arkansas River Navigation System. Total cost for these three locks is $4.5 million. This project will involve installation of tow haulage equipment on W.D. Mayo Lock and Dam #14, Robert S. Kerr Lock and Dam #15, and Webbers Falls Lock and Dam #16, on the Oklahoma portion of the waterway. The tow haulage equipment is needed to make transportation of barges more efficient and economical by allowing less time for tows to pass through the various lock and dams.

We are pleased that the President's budget includes funds to advance work for Flood Control and other water resource needs in Oklahoma. Of special interest to our committee is funding for the Skiatook and Tenkiller Ferry Lakes Dam Safety Assurance Projects in Oklahoma and that construction funding has been provided for those important projects. We are also pleased that funding is included to continue reconnaissance studies and initiate feasibility studies in the North Canadian River Basin for Warr Acres, Oklahoma, for the Cimarron River basin in Kansas and Oklahoma.

Arkansas River System Operations Feasibility Study, Arkansas and Oklahoma.—We are especially pleased that the budget includes funds to continue the Arkansas River Navigation Study, a feasibility study which is examining opportunities to optimize the Arkansas River system. The system of multipurpose lakes in Arkansas and Oklahoma on the Arkansas River and its tributaries supports the McClellan-Kerr Navigation System, which was opened for navigation to the Port of Catoosa near Tulsa, Oklahoma, in 1970. The navigation system consists of 445 miles of waterway that winds through the States of Oklahoma and Arkansas. This study would optimize the reservoirs in Oklahoma and Arkansas that provide flows into the river with a view toward improving the number of days per year that the navigation system would accommodate tows. This study could have significant impact on the economic development opportunities in the States of Oklahoma, Arkansas, and the surrounding states. Due to the critical need for this study, however, we request funding of $1.4 million, which is greater than shown in the budget, to continue feasibility studies in fiscal year 2001.

Illinois River Watershed Reconnaissance Study.—We request funding in the amount of $100,000 to conduct a reconnaissance study of the water resource problems of the Illinois River Basin. The Illinois River watershed is experiencing continued water resource development needs and is the focus of ongoing Corps and other agency investigations. However, additional flows are sought downstream of the Lake Tenkiller Dam and there are increasing watershed influences upstream of Lake Tenkiller which impact on the quality of water available for fish and wildlife, municipal and industrial water supply users, and recreation users of the Lake Tenkiller and Illinois River waters.

Grand (Neosho) Basin Reconnaissance Study.—We request funding in the amount of $100,000 to conduct a reconnaissance study of the water resource problems in the Grand (Neosho) Basin in Oklahoma and Kansas. There is a need for a basin-wide water resource planning effort in the Grand-Neosho River basin, apart from the issues associated with Grand Lake, Oklahoma. The reconnaissance study would focus on the evaluation of institutional measures which could assist communities,

landowners, and other interests in northeastern Oklahoma and southeastern Kansas in the development of non-structural measures to reduce flood damages in the basin.

Grand Lake Feasibility Study.—We also support the effort to evaluate water resource problems in the Grand-Neosho River basin in Kansas and Oklahoma and request funding to initiate a comprehensive Feasibility study to evaluate solutions to upstream flooding problems associated with the adequacy of existing real estate easements necessary for flood control operations of Grand Lake, Oklahoma. A study, authorized by the Water Resources Development Act of 1996 was completed in September of 1998 and determined that if the project were constructed based on current criteria, additional easements would be acquired. A Feasibility study is now required to determine the most cost effective solution to the real estate inadequacies. Changes in the operations of the project or other upstream changes could have a significant impact on flood control, hydropower, and navigation operations in the Grand (Neosho) River system and on the Arkansas River basin system, as well; we urge you to provide $3 million to fully fund Feasibility studies for this important project in fiscal year 2001 and to direct the Corps of Engineers to execute the study at full Federal expense.

Lake Tenkiller Reallocation Study.—We request funding of $500,000 to conduct a reallocation study of the water storage of Tenkiller Ferry Lake, Oklahoma. Tenkiller Ferry Lake is located on the Illinois River approximately 7 miles northeast of Gore, Oklahoma, and 22 miles southeast of Muskogee, Oklahoma. Construction of the existing project began in June 1947 and the dam was completed in May 1952. The proposed study would involve reallocation of the authorized project purposes among competing users of the project's flood control, hydropower and water supply resources.

Wister Lake Reallocation Study.—We request funding of $450,000 to conduct a reallocation study of the water storage of Wister Lake, Oklahoma. Wister Lake is located on the Poteau River near Wister, Oklahoma. The lake was completed in 1949 for flood control, water supply, water conservation and sediment control. Wister Lake is the primary water resource development project in the Poteau River Basin. It provides substantial flood control, municipal and industrial water supply, and recreation benefits for residents of LeFlore County, Oklahoma, and the southeastern Oklahoma region. Originally constructed for flood control and water conservation, seasonal pool manipulation was initiated in 1974 to improve the project's water supply and recreation resources. The conservation pool level was permanently raised in the Water Resources Development Act of 1996. A reallocation study, which would include National Environmental Policy Act (NEPA) coordination, is required. NEPA and other resource evaluation and coordination would include the assessment of cultural and fish and wildlife impacts, potential mitigation measures, and reallocation studies.

Oologah Lake Water Quality Study.—We request funding of $515,000 for ongoing water quality studies at Oologah Lake and in the upstream watershed. The lake is an important water supply source for the city of Tulsa and protection of the lake and maintaining and enhancing the quality of the water is important for the economic development of the city. The Corps of Engineers is working closely with the city and with the Oklahoma Water Resources Board to insure a unified approach to analysis and preservation of the lake water quality. We request the study be funded and that the Corps of Engineers be directed to conduct the studies at full Federal expense. We also support funding for the Continuing Authorities Program, including the Small Flood Control Projects Program, (Section 205 of the 1948 Flood Control Act, as amended) and the Emergency Streambank Stabilization Program, (Section 14 of the 1946 Flood Control Act, as Amended). We want to express our appreciation for your continued support of those programs.

Section 205.—Although the Small Flood Control Projects Program addresses flood problems which generally impact smaller communities and rural areas and would appear to benefit only those communities, the impact of those projects on economic development crosses county, regional, and sometimes state boundaries. The communities served by the program frequently do not have the funds or engineering expertise necessary to provide adequate flood damage reduction measures for their citizens. Continued flooding can have a devastating impact on community development and regional economic stability. The program is extremely beneficial and has been recognized nation-wide as a vital part of community development, so much so, in fact, that there is currently a backlog of requests from communities who have requested assistance under this program. There is limited funding available for these projects and we urge this program be fully funded to the programmatic limit of $40 million.

Section 14.—Likewise, the Emergency Streambank Stabilization Program provides quick response engineering design and construction to protect important local utilities, roads, and other public facilities in smaller urban and rural settings from damage due to streambank erosion. The protection afforded by this program helps insure that important roads, bridges, utilities, and other public structures remain safe and useful. By providing small, affordable, and relatively quickly constructed projects, these two programs enhance the lives of many by providing safe and stable living environments. There is also a backlog of requests under this program. Funding is also limited for these projects and we urge this program be fully funded to the programmatic limit of $15 million.

Sections 1135 and 206.—We also request your continued support of and funding for the Ecosystem Restoration Programs (Section 1135 of the Water Resources Development Act of 1986 and Section 206 of the Water Resources Development Act of 1996). The Ecosystem Restoration Programs are relatively new programs which offer the Corps of Engineers a unique opportunity to work to restore valuable habitat, wetlands, and other important environmental features which previously could not be considered. The Section 1135 Program is already providing significant benefits to the States of Kansas and Oklahoma. We urge that these programs be fully funded to the programmatic limit of $25 million each.

We also request your continued support of the Flood Plain Management Services Program (Section 206 of the 1960 Flood Control Act) which authorizes the Corps of Engineers to use its technical expertise to provide guidance in flood plain management matters to all private, local, state, and Federal entities. The objective of the program is to support comprehensive flood plain management planning. The program is one of the most beneficial programs available for reducing flood losses and provides assistance to officials from cities, counties, states, and Indian Tribes to ensure that new facilities are not built in areas prone to floods. Assistance includes flood warning, flood proofing, and other flood damage reduction measures, and critical flood plain information is provided on a cost reimbursable basis to home owners, mortgage companies, Realtors and others for use in flood plain awareness and flood insurance requirements.

We also request your support of the Planning Assistance to States Program (Section 22 of the 1974 Water Resources Development Act) which authorizes the Corps of Engineers to use its technical expertise in water and related land resource management to help States and Indian Tribes solve their water resource problems. The program is used by many states to support their State Water Plans. As natural resources diminish, the need to manage those resources becomes more urgent. We urge your continued support of this program as it supports States and Native American Tribes in developing resource management plans which will benefit citizens for years to come. The program is very valuable and effective, matching Federal and non-Federal funds to provide cost effective engineering expertise and support to assist communities, states and tribes in the development of plans for the management, optimization, and preservation of basin, watershed, and ecosystem resources. The Water Resources Development Act of 1996 increased the annual program limit from $6 million to $10 million and we urge this program be fully funded to the programmatic limit of $10 million.

We also request your support and funding for the Challenge 21 Program. The Challenge 21 Program is in support of the Clean Water Action Plan and would provide opportunity for the Corps of Engineers to work closely with other Federal, State, and Local land and water resource agencies to develop comprehensive solutions to reduce flood damages and improve quality of life. The program would focus on watershed-based solutions that could also include the restoration of riparian and wetland ecosystems. Although the construction of dams and levees has prevented billions of dollars in flood damages, many communities still experience disastrous flood events. Some of that flooding can be attributed to over development in and around the flood plain. The Challenge 21 program will focus on opportunities to move homes and businesses from harms way through structural and non-structural measures and through comprehensive watershed planning efforts. We support funding of this important initiative.

On a related matter, we would share with you our concern that the Administration has not requested sufficient funds to meet the increasing infrastructure needs of the inland waterways of our nation. The Administration's request will not keep projects moving at the optimum level to complete them on a cost effective basis. Moving the completion dates out is an unacceptable exercise since 50 percent of the funds come from the Waterways Trust Fund. This will not only waste federal funds but, those from the trust fund as well.

We strongly urge the Appropriations Committee to raise the Corps of Engineers budget to $4.9 billion to help get delayed construction projects back on schedule and

to reduce the deferred maintenance backlog which is out of control. This will help the Corps of Engineers meet the obligations of the Federal Government to people of this great country.

Concerning another related matter, we have deep concerns about the attempt to re-authorize the Endangered Species Act without significant beneficial reforms. If a bill is passed through without reforms, it will be devastating to industry and the country as a whole. We strongly urge you to take a hard look at any bill concerning this re-authorization and insure that it contains reasonable and meaningful reforms.

Mr. Chairman, we appreciate this opportunity to present our view on these subjects.

SOUTHWEST U.S. WATER RESOURCE DEVELOPMENT PROJECTS

PREPARED STATEMENT OF THE COLORADO RIVER BASIN SALINITY CONTROL FORUM

This testimony is in support of funding for the Colorado River Basin salinity control program. Congress has designated the Department of the Interior, Bureau of Reclamation (Reclamation), to be the lead agency for salinity control in the Colorado River Basin. This role and the authorized program were refined and confirmed by the Congress when Public Law 104–20 was enacted. A total of $17,500,000 is requested for fiscal year 2000 to implement the needed and authorized program. Failure to appropriate these funds will result in significant economic damage in the United States and Mexico and threaten compliance with adopted basin-wide water quality standards in the future. The President's request of $10.85 million is a reduced funding level and the Forum feels this level of funding is inadequate. Studies have shown that implementation of the program has fallen behind the needed pace to prevent salinity concentrations from exceeding numeric criteria adopted. These water quality standards for the River Basin must be honored while the Basin states continue to develop their Compact apportioned waters of the Colorado River. Concentrations of salts in the water above the criteria would cause hundreds of millions of dollars in damage in the United States and result in poorer quality water being delivered by the United States to Mexico. For every 30 mg/l increase in salinity concentrations, there is $100 million in additional damages in the United States. The Forum, therefore, believes a rate of implementation of the program beyond that requested by the President is necessary.

The program authorized by the Congress in 1995 has proven to be very successful and very cost effective. Proposals from the public and private sector to implement salinity control strategies have far exceeded the available funding. Hence, Reclamation has a backlog of proposals and is able to select the best and most cost-effective proposals. Funds are available for the Colorado River Basin states' cost sharing for the level of federal funding requested by the Forum. Water quality improvements accomplished under Title II of the Colorado River Basin Salinity Control Act also benefit the quality of water delivered to Mexico. Although the United States has always met the commitments of the International Boundary & Water Commission's (Commission) Minute 242 to Mexico with respect to water quality, the United States Section of the Commission is currently addressing Mexico's request for better water quality at the Southerly International Boundary. Consideration of all of this argues for a higher level of funding than requested by the President.

OVERVIEW

The Colorado River Basin Salinity Control Program was authorized by Congress in 1974. The Title I portion of the Colorado River Basin Salinity Control Act responded to commitments that the United States made, through Minute 242, to Mexico concerning the quality of water being delivered to Mexico below Imperial Dam. Title II of the Act established a program to respond to salinity control needs of Colorado River water users in the United States and to comply with the mandates of the then newly legislated Clean Water Act. Initially, the Secretary of the Interior and the Bureau of Reclamation were given the lead federal role by the Congress. This testimony is in support of adequate funding for the Title II program.

After a decade of investigative and implementation efforts, the Basin states concluded that the Salinity Control Act needed to be amended. Congress revised the Act in 1984. That revision, while keeping the Secretary of the Interior as lead coordinator for Colorado River Basin salinity control efforts, also gave new salinity control responsibilities to the Department of Agriculture, and to a sister agency of the Bureau of Reclamation—the Bureau of Land Management. Congress has charged the Administration with implementing the most cost-effective program practicable (measured in dollars per ton of salt removed). The Basin states are strongly sup-

portive of that concept as the Basin states consider cost sharing 30 percent of federal expenditures up-front for the salinity control program, in addition to proceeding to implement their own salinity control efforts in the Colorado River Basin.

The Colorado River Basin Salinity Control Forum (Forum) is composed of gubernatorial appointees from Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming. The Forum has become the seven-state coordinating body for interfacing with federal agencies and Congress to support the implementation of the program necessary to control the salinity of the river system. In close cooperation with the Environmental Protection Agency (EPA) and under requirements of the Clean Water Act, every three years the Forum prepares a formal report analyzing the salinity of the Colorado River, anticipated future salinity, and the program necessary to keep the salinities at or below the levels measured in the river system in 1972.

In setting water quality standards for the Colorado River system, the salinity levels measured at Imperial, and below Parker, and Hoover Dams in 1972 have been identified as the numeric criteria. The plan necessary for controlling salinity has been captioned the "plan of implementation." The 1999 Review of water quality standards includes an updated plan of implementation. The level of appropriation requested in this testimony is in keeping with the agreed upon plan. If adequate funds are not appropriated, state and federal agencies involved are in agreement that the numeric criteria will be exceeded and damage from the high salt levels in the water will be widespread in the United States as well as Mexico and will be very significant.

JUSTIFICATION

The $17,500,000 requested by the Forum on behalf of the seven Colorado River Basin states is the level of funding necessary to proceed with Reclamation's portion of the plan of implementation. This funding level is appropriate if salinity in the Colorado River is to be controlled so as not to exceed the established numeric criteria and threaten the associated water quality standards. In July of 1995, Congress amended the Colorado River Basin Salinity Control Act. The amended Act gives Reclamation new latitude and flexibility in seeking the most cost-effective salinity control opportunities, and it provides for proposals and more involvement from the private as well as the public sector. Early results are indicating that salt loading is being prevented at costs often less than half the cost under the previous program. The Bureau of Reclamation's recent review of the program and the amendments Congress authorized have made the program more effective in removing salt from the Colorado River in a most cost-effective manner.

The Senate this last year passed legislation that gives additional spending authority to Reclamation for this program. Similar legislation is being considered by the House. It has received a favorable hearing with support from the Forum and the Administration, and mark-up and passage is expected soon.

The Basin states have agreed to cost sharing on an annual basis, which adds 43 cents for every federal dollar appropriated. The Colorado River Basin Salinity Control Forum, working with EPA, has agreed upon a plan of implementation for salinity control, and that plan justifies the level of funding herein supported by the Forum to maintain the water quality standards for salinity adopted by the Basin states. The federally chartered Colorado River Basin Salinity Control Advisory Council, created by the Congress in the Salinity Control Act, has met and formally supports the requested level of funding. The Basin states urge the Subcommittee to support the funding as set forth in this testimony.

ADDITIONAL SUPPORT OF FUNDING

In addition to the dollars identified above for the implementation of the newly authorized program, the Salinity Control Forum urges the Congress to appropriate necessary funds, as identified in the President's budget, to continue to maintain and operate salinity control facilities as they are completed and placed into long-term operation. Reclamation has completed the Paradox Valley unit which involves the collection of brines in the Paradox Valley of Colorado and the injection of those brines into a deep aquifer through an injection well. The continued operation of the project and other completed projects will be funded through Operation and Maintenance funds.

In addition, the Forum supports necessary funding to allow for continued general investigation of the salinity control program. It is important that Reclamation have planning staff in place, properly funded, so that the progress of the program can be analyzed, coordination between various federal and state agencies can be accomplished, and future projects and opportunities to control salinity can be properly planned to maintain the water quality standards for salinity so that the Basin

states can continue to develop the Compact apportioned waters of the Colorado River.

PREPARED STATEMENT OF THE NEW MEXICO INTERSTATE STREAM COMMISSION

SUMMARY

This Statement is submitted in support of appropriations for the Colorado River Basin salinity control program of the Department of the Interior's Bureau of Reclamation. Congress designated the Bureau of Reclamation to be the lead agency for salinity control in the Colorado River Basin by the Colorado River Basin Salinity Control Act of 1974. The Bureau of Reclamation's role was reconfirmed by Public Law 104–20. A total of $17.5 million is requested for fiscal year 2001 to implement the authorized salinity control program of the Bureau of Reclamation. The President's request of $10.85 million is inadequate to protect water quality standards for salinity and prevent unnecessary levels of economic damage from increased salinity levels in water delivered to the Lower Basin States and Mexico.

STATEMENT

The Water quality standards for salinity of the Colorado River must be protected while the Basin States continue to develop their compact apportioned waters of the river. Studies have shown that the implementation of the salinity control program has fallen below the threshold necessary to prevent future exceedence of the numeric criteria of the water quality standards for salinity in the Lower Basin of the Colorado River. The water quality standards for salinity of the Colorado River have been adopted by the seven Basin States and approved by EPA. While currently the standards have not been exceeded, salinity control projects must be brought on-line in a timely and cost-effective manner to prevent future effects that would cause the numeric criteria to be exceeded.

The Colorado River Basin Salinity Control Act was authorized by Congress and signed into law in 1974. The seven Colorado River Basin States, in response to the Clean Water Act of 1972, had formed the Colorado River Basin Salinity Control Forum, a body comprised of gubernatorial representatives from the seven Basin States. The Forum was created to provide for interstate cooperation in response to the Clean Water Act, and to provide the states with information necessary to comply with Sections 303 (a) and (b) of the Act. The Forum has become the primary means for the seven Basin States to coordinate with federal agencies and Congress to support the implementation of the salinity control program for the Colorado River Basin.

The Bureau of Reclamation is currently completing studies on the economic impacts of the salinity of the Colorado River in the United States. Reclamation's study indicates that damages in the United States may soon be approaching $1 billion per year. It is essential that appropriations for the funding of the salinity control program be timely in order to comply with the water quality standards for salinity to prevent unnecessary economic damages in the United States and Mexico from waters of the Colorado River. The President's request of $10.85 million for fiscal year 2001 is inadequate to protect the water quality standards adopted by each of the seven Basin States and approved by EPA, and threatens the quality of water delivered to Mexico that is protected under Minute No. 242 of the International Boundary and Water Commission, United States and Mexico.

Congress amended the Colorado River Basin Salinity Control Act in July, 1995. The salinity control program authorized by Congress by the amendment in 1995 has proven to be very cost-effective, and the Basin States are standing ready with up-front cost sharing. Proposals from public and private sector entities in response to the Bureau of Reclamation's advertisement have far exceeded available funding. Basin States cost-sharing funds are available for the $17.5 million appropriation request for fiscal year 2001. The Basin States cost-sharing adds 43 cents for each federal dollar appropriated.

The Senate passed legislation last year which gives the Bureau of Reclamation additional spending authority for the salinity control program. Similar legislation is being considered by the House, and has been given favorable hearing with strong support from the Forum, the Basin States and the Administration. Mark-up and passage is expected in the near future. With the additional authority in place and significant cost sharing by the Basin States, it is essential that the salinity control program be funded at the level requested by the Forum and Basin States to protect the water quality of the Colorado River and prevent unnecessary economic damages from salinity in the United States and Mexico.

I urge the Congress to appropriate $17.5 million to the Bureau of Reclamation for the Colorado River Basin salinity control program. Also, I fully support testimony supplied by the Forum's Executive Director, Jack Barnett, in request for this appropriation.

PREPARED STATEMENT OF THE WESTERN COALITON OF ARID STATES

Chairman Domenici and members of the subcommittee: The Western Coalition of Arid States (WESTCAS) is pleased to submit comments for the record, regarding programs contained in the U.S. Bureau of Reclamation's (Reclamation) fiscal year 2001 budget, for the Hearing on Energy and Water Appropriations. WESTCAS is an organization of cities, towns, water and wastewater districts and associate agencies from the States of Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, Texas and Utah who are dedicated to environmentally conscientious planning of water resources and development of water quality standards for the unique ecosystems of the arid West. Of particular interest to WESTCAS and its member agencies are the federal programs that can further our goals through partnerships and scientifically sound regulation and guidance concerning our most precious resource—water. WESTCAS would like the Subcommittee to consider the following funding recommendations.

COLORADO RIVER BASIN SALINITY CONTROL PROGRAM

Since 1974, federal agencies and the seven basin states have been working together to maintain the Colorado River's salinity levels within a range which does not limit the economic, recreational, and environmental uses of the river. The Colorado River is a major source of water supply for the urban and agricultural regions of Utah, Nevada, Arizona, and Southern California. It is important that Congress continue to fund the federal portions of this successful program. With continued development of water sources in the Upper Colorado Basin and continued shortfalls in salinity control funding, the salinity levels will continue to increase in the Lower Colorado River Basin. The increased salinity in the Lower Colorado River Basin will have a long-term detrimental financial impact on agricultural and urban activities in the areas dependent on the Lower Colorado River water.

The Colorado River Basin Salinity Control Forum (Forum), the interstate organization responsible for coordinating the Basin states' salinity control efforts, issued its 1999 Review, Water Quality Standards for Salinity, Colorado River System (1999 Review) in June 1999. The 1999 Review found that additional salinity control was necessary beginning in 1994 to meet the numeric criteria in the water quality standards adopted by the seven Colorado River Basin states and approved by the U.S. Environmental Protection Agency, with normal water supply conditions. For the last five years, federal appropriations for Reclamation have not equaled the Forum-identified funding need for the portion of the program the Federal Government has the responsibility to implement. It is essential that implementation of Reclamation's basinwide salinity control program be accelerated to permit the numeric criteria to be met again under average annual long-term water supply conditions, making up the shortfall. To assist in eliminating the shortfall, the Forum once again recommends that Reclamation utilize up front cost sharing from the Basin states to supplement federal appropriations. This concept has been embraced by Reclamation and is reflected in the President's proposed budget.

The President's proposed fiscal year 2001 budget contains funding of $10.85 million for implementation of the basin-wide program. WESTCAS requests that Congress appropriate $17.5 million for implementation of the basin-wide program, an increase of $6.65 million from that proposed by the President. This level of funding is necessary to meet the salinity control activities schedule in order to maintain the state adopted and federally approved water quality standards.

WATER RECYCLING AND GROUNDWATER RECOVERY

Projects funded under Title XVI of the Reclamation Projects Authorization and Adjustment Act of 1992 (Public Law 102–575) will greatly improve water supply reliability and the environment. Title XVI projects authorized by the Reclamation Recycling and Water Conservation Act of 1996 (Public Law 104–266), but not included in the President's proposed fiscal year 2001 budget for the U.S. Bureau of Reclamation, are considered to be equally important. Implementation of such projects is difficult without combined federal, state and regional assistance. These authorized projects will greatly improve water supply reliability and the environment through effective water recycling and recovery of contaminated groundwater in the arid

west. WESTCAS strongly requests that Congress increase the appropriation level for Reclamation's Title XVI program from $22 million requested for fiscal year 2001 to $100 million in order to properly fund all of these authorized projects.

SMALL RECLAMATION LOAN PROGRAM

The Small Reclamation Loan Program provides funds for reclamation, in partnership with local districts to finance projects to conserve water by upgrading less efficient facilities, improve water quality, enhance fish and wildlife, and support Indian self-sufficiency through loans to Native American projects.

DROUGHT EMERGENCY ASSISTANCE

WESTCAS has been actively involved in the National Drought Policy Commission efforts to recommend a national drought policy for the country. As part of the larger effort on drought, the Bureau of Reclamation has in place a Drought Emergency Assistance program. We are concerned that the Bureau of Reclamation has only requested $500,000 for fiscal year 2001. WESTCAS would like to see the program funded at the $3 million level that Congress provided in fiscal year 2000

EFFICIENCY INCENTIVES PROGRAM

Reclamation is encouraging innovation in water resources management to help meet the water conservation objectives of the Reclamation Reform Act of 1982. The program provides partnership capability for Reclamation and its customers, in cooperation with States and other entities, in seeking solutions to water use efficiency and conservation. The program supports technical assistance to districts in planning, evaluating, and implementing efficiency measures. Activities are located within all Federal water projects in the 17 Western States. WESTCAS supports the $3.1 million request.

ENDANGERED SPECIES RECOVERY IMPLEMENTATION

Reclamation is designated as a cooperative participant in recovery measures to minimize the potential effects of Reclamation actions upon listed or candidate species and reduce the potential for more stringent requirements being imposed upon Reclamation projects as a result of formal consultation pursuant to Section 7(a)(2) of the Endangered Species Act. Activities are located throughout the region including the Upper and Lower Colorado River basins. WESTCAS supports the approximately $15 million provided in the fiscal year 2001 Budget for work in these two basins.

NATIONAL FISH AND WILDLIFE FOUNDATION

This program operates under a delegated grant of authority for fish and wildlife assistance programs from the Secretary to the Commissioner of the Bureau of Reclamation. Reclamation's funds are used for fish and wildlife restoration projects in partnership with local, state, tribal, and/or non-governmental organizations. Funding for the Foundation, and the Foundation's support for programs like the Lower Colorado River Multi-Species Conservation Program, are extremely important to the development of comprehensive solutions to the complex endangered species issues. WESTCAS supports the $4.3 million in fiscal year 2001 Budget for the Foundation.

DESALINATION RESEARCH DEVELOPMENT PROGRAM

This program addressees problems and technology needs for water supply augmentation, water quality improvement and protection. Studies are directed at reducing costs and minimizing environmental impacts from salt removal, developing commercially attractive technologies, improving surface and groundwater quality, and facilitating cost-effective conversion of previously unusable water resources to usable water supplies. WESTCAS supports the $600,000 in the fiscal year 2001 and would suggest that the Bureau of Reclamation work with organizations like WESTCAS on the research agenda.

WATER MANAGEMENT CONSERVATION PROGRAM

This program provides for a water quality monitoring program in cooperation with state and local entities. Funding requests provide for the coordination of water management and conservation efforts with the water users and other non-Federal entities. It also provides for water conservation centers and training, improvements in water measurement and accounting. We support the $7.6 million request for this program.

WETLANDS DEVELOPMENT PROGRAM

The Wetlands Development Program allows for the development of design criteria, strategies, and implementation of wetland enhancement projects which provide for water quality, wildlife habitat, and aesthetic purposes. Projects are located throughout the 17 Western States and include demonstration projects using reclaimed wastewater from existing treatment facilities in Arizona and wetlands and wildlife habitat in Nevada. WESTCAS supports the overall $5 million request for this program for fiscal year 2001.

Thank you for your consideration of our testimony. We believe our comments emphasize the importance of continued funding for Reclamation water resources management and ecosystem restoration programs that are critical for water supply reliability in the arid West.

PREPARED STATEMENT OF THE STATE OF WYOMING

This testimony is submitted in support of a fiscal year 2001 appropriation of $17,500,000 for the Bureau of Reclamation's Colorado River Salinity Control Program. Testimony was recently submitted to this Subcommittee by the Colorado River Basin Salinity Control Forum (Forum), a seven-state organization created by the Governors of the Colorado River Basin States, by the Forum's Executive Director, Jack Barnett. The State of Wyoming, a member state of the Forum, concurs in the Forum's testimony. While the President's recommended budget line-item for the basin-wide Colorado River Basin Salinity Control Program is $10,850,000, the State of Wyoming and the Forum urge the Congress to increase the appropriation for this Program to $17,500,000. While we appreciate the Administration's support of this Program, it is clear that implementation of the Program has fallen behind the needed pace to prevent salinity concentration levels from exceeding specified numeric criteria in the water quality standards for the Colorado River. In addition to considerations of complying with this basin-wide water quality standard, the United States has committed to the Republic of Mexico, pursuant to Minute 242 of the 1944 "Treaty Between the United States and Mexico, Relating to Waters of the Colorado and Tijuana River and of the Rio Grande," to managing the salinity concentrations of water deliveries to Mexico.

The State of Wyoming is one of the seven member states represented on the Forum and the Colorado River Basin Salinity Control Advisory Council (Council). The Council was created by Section 204 of the 1974 Colorado River Basin Salinity Control Act (Public Law 93–320). Like the Forum, the Council is composed of gubernatorial representatives of the seven Colorado River Basin states. Both the Council and Forum serve important liaison roles among the seven states, the Secretaries of the Interior and Agriculture and the Administrator of the Environmental Protection Agency (EPA). The Council is directed by statute to advise these federal officials on the progress of the federal/state cost-shared, basin-wide salinity control programs, and annually recommends to the Federal agencies what level of funding it believes is required to meet the objective of assuring continuing compliance with the basin-wide water quality standards for salinity concentrations in the Colorado River.

The Council met in October 1999 and developed funding recommendations for fiscal years 2001 and 2002 based on the progress the Bureau of Reclamation, the U.S. Department of Agriculture, the Bureau of Land Management and the seven states are making in implementing their programs for managing and reducing the salt loading into the Colorado River System. The Council's funding recommendations further heeded analyses made by the Bureau of Reclamation and the Forum. Each three years the Forum updates the plan of implementation for maintaining the Colorado River water quality standards for salinity in accordance with Section 303 of the Clean Water Act. The 1999 triennial review of the standards identified the need for the Bureau of Reclamation to expend $17,500,000 per year in order to carry out its portion of the plan of implementation. The plan is devised to assure that the salinity concentrations of Colorado River water do not exceed the numeric criteria set forth in the standards. Based on its own review of the facts, the Council recommended that a minimum of $17,500,000 needs to be expended by the Bureau of Reclamation during fiscal year 2000 to accomplish needed salinity control activities.

This funding level is appropriate if the salinity of Colorado River waters is to be controlled so as not to exceed the numeric salinity concentration criteria contained within the water quality standards for the Colorado River. Without the necessary levels of funding, there is an increased probability that the numeric criteria will be exceeded resulting in violations of the basin-wide water quality standards. Further, there is an increased probability that the numeric criteria will be exceeded resulting in violations of the basin-wide water quality standards. Failure to maintain the

standards' numeric criteria could result in the imposition of state-line water quality standards (as opposed to the successful basin-wide approach that has been in place since 1975) and impair Wyoming's ability to develop our Compact-apportioned water supplies. Failure to maintain the standards' numeric criteria could result in the imposition of state-line water quality standards (as opposed to the successful basin-wide approach that has been in place since 1975) and impair the Colorado River Basin States' ability to develop their Compact-apportioned water supplies. Delaying or deferring adequate funding will create the need for a much more expensive salinity control effort in the future to assure that the Colorado River Basin states are able to comply with the water quality standards. "Catch-up" funding in the future will require the expenditure of greater sums of money, increase the likelihood that the numeric criteria for Colorado River water quality are exceeded, and create undue burdens and difficulties for one of the most successful Federal/State cooperative non-point source pollution control programs in the United States.

In July, 1995, Congress amended the Colorado River Basin Salinity Control Act. The amended Act provided Reclamation with additional authorities that have improved upon the cost-effectiveness of Reclamation's salinity control program, in large part because it provided for proposals and greater involvement from the private sector. Submitted proposals have far exceeded the available funding, while at the same time overall progress in accomplishing the rate of salinity control determined to be needed and as set forth in the Plan of Implementation continues to fall behind the scheduled rate.

We urge this Subcommittee to increase the funding level for the Colorado River Basin Salinity Control Program line-item in Reclamation's budget, beyond the funds requested by the President's budget, to $17,500,000. In addition to the funding needs identified for the basin-wide Colorado River Basin Salinity Control Program, the State of Wyoming supports the appropriation of Operation and Maintenance funds for completed Reclamation salinity control projects, including the Paradox Valley Unit. The State of Wyoming understands that a portion of the General Investigation Funds included in the President's budget are intended for salinity control activities. Wyoming supports the appropriation of funds to accomplish these necessary planning and investigation activities.

Thank you for the opportunity to submit this testimony. I request, in addition to your consideration of its contents, that you make it a part of the formal hearing record concerning fiscal year 2001 appropriations for the Bureau of Reclamation.

PREPARED STATEMENT OF THE STATE OF ARIZONA

On behalf of the people of Arizona, I would like to thank you for the opportunity to enter testimony into the record concerning our support of continued appropriations for the Central Arizona Project (CAP). I also would like to thank the Committee, the Senate and the Congress for its continuing support for the CAP, which is an essential lifeline in the arid Southwest.

As you know, the CAP was authorized by the 90th Congress of the United States under the Colorado River Basin Project Act of 1968. The CAP is a multi-purpose water resource development project consisting of a series of concrete-lined canals, tunnels, dams and pumping plants which lift water nearly 3,000 feet over a distance of 336 miles from Lake Havasu on the Colorado River to the Tucson area.

The project was designed to deliver the remainder of Arizona's entitlement of Colorado River water into the central and southern portions of the state for municipal and industrial, agricultural and Indian uses, where about 80 percent of our state's population resides.

Because of a growing population and some innovative storage and recharge programs, Arizona is close to taking its full CAP allocation of 1.5 million acre-feet (maf) of Colorado River water. This year, we project more than 1.4 maf will be delivered through the CAP.

Repayment of the costs of the CAP to the Bureau of Reclamation (Reclamation) has been a contentious issue for most of the past decade. Happily, it appears the CAP governing board, the Central Arizona Water Conservation District (CAWCD) and Reclamation have reached an agreement on repayment.

The CAWCD board voted in March to approve the negotiated agreement. This settlement is vastly preferable to the continuation of litigation in U.S. District Court. But we must add a note of caution. Conclusion of the agreement between CAWCD and Reclamation still is contingent upon a number of events.

Chief among these is agreement on allocation of a large block of CAP water, a step that requires us to proceed carefully. Also, Arizona and the Federal Govern-

ment must reach an understanding that water from the CAP will forever be available to both parties under prescribed terms and conditions.

In addition, we need to agree that Arizona will determine how best to use its CAP water, free from unwarranted oversight from the Department of Interior. And it is vital that all parties agree that water from the CAP will remain within the boundaries of the state, to supply the needs of the people of Arizona.

As Governor of Arizona, I am pleased to be able to support the Reclamation budget request for fiscal year 2001 of $33,667,000.

INDIAN DISTRIBUTION SYSTEMS

It is most appropriate that more than $25.8 million is earmarked for construction of distribution systems on Indian lands. Through the Arizona Department of Water Resources and the invaluable assistance of U.S. Sen. Jon Kyl, R–AZ, we are substantially closer to reaching negotiated settlements on the major Indian water rights claims in Arizona than we have been at any other time.

Indeed, we anticipate that our message to the Committee next year will reflect the reality that significant Indian water rights claims have been settled and that remaining claims will be settled in the near future. It has been a long and sometimes difficult journey, but we believe we now can see the end of the road.

We are indeed encouraged that Reclamation saw fit to increase its budget request for Indian distribution systems by 131 percent over the fiscal year 2000 request, from $11.1 million to $25.8 million.

FISH & WILDLIFE

In the Reclamation budget request, $1.06 million is targeted to implement activities in the Gila River Basin and on the Santa Cruz River stemming from a 1994 opinion by the U.S. Fish and Wildlife Service. I add my support to the position of CAWCD, which historically has objected to Reclamation expenditures on these activities. Litigation on this issue still is pending, and the sensible course would be to await its outcome before proceeding in this area.

TUCSON RELIABILITY DIVISION

We are pleased to support continuation of funding for the Tucson Reliability Division. The Tucson area's CAP picture, clouded in the past, is much clearer in the wake of an election that ratified the course of action local leaders are pursuing with regard to Tucson's CAP allocation. The amount requested, $46,000, will assist in providing the Tucson area with more stability and certainty about its water supplies.

WEST SALT RIVER VALLEY WATER MANAGEMENT STUDY

As I did last year, I would like to take this opportunity to advocate an increased level of funding for water planning in the rapidly growing West Valley portion of the Phoenix metropolitan area. While Reclamation has requested $200,000, I agree with CAWCD that an increase in this appropriation to $400,000 is justified.

RIO SALADO

We also support increased appropriations for the Tempe/Phoenix Rio Salado Environmental Restoration Program from $1.5 million to $20 million. This partnership with the U.S. Army Corps of Engineers will restore lost riparian wetlands along the Salt River through the center of the Phoenix metropolitan area. Rio Salado was authorized for $86 million in WRDA 99. Fiscal year 2001 appropriations of $20 million will keep the project on schedule for completion in 2003.

I look forward to favorable subcommittee action on the Reclamation budget request. We would be happy to offer any additional information that you require.

PREPARED STATEMENT OF THE CENTRAL ARIZONA WATER CONSERVATION DISTRICT

Mr. Chairman: The Central Arizona Water Conservation District (CAWCD) is pleased to offer the following testimony regarding the fiscal year 2001 Energy and Water Development Appropriations Bill.

The Central Arizona Project or "CAP" was authorized by the 90th Congress of the United States under the Colorado River Basin Project Act of 1968. We thank the Committee for its continuing support of the CAP. The CAP is a multi-purpose water resource development project consisting of a series of canals, tunnels, dams, and pumping plants which lift water nearly 3,000 feet over a distance of 336 miles from

Lake Havasu on the Colorado River to the Tucson area. The project was designed to deliver the remainder of Arizona's entitlement of Colorado River water into the central and southern portions of the state for municipal and industrial, agricultural, and Indian uses. The Bureau of Reclamation (Reclamation) initiated project construction in 1973, and the first water was delivered into the Phoenix metropolitan area in 1985. The CAP delivered about 1.3 million acre-feet of water to project water users in 1999 and anticipates delivering 1.4 million acre-feet in 2000.

CAWCD was created in 1971 for the specific purpose of contracting with the United States to repay the reimbursable construction costs of the CAP that are properly allocable to CAWCD, primarily water supply and power costs. In 1983, CAWCD was also given authority to operate and maintain completed project features. Its service area is comprised of Maricopa, Pima, and Pinal counties. CAWCD is a tax-levying public improvement district, a political subdivision, and a municipal corporation, and represents roughly 80 percent of the water users and taxpayers of the State of Arizona. CAWCD is governed by a 15 member Board of Directors elected from the three counties it serves. CAWCD's Board members are public officers who serve without pay.

Project repayment is provided for through a 1988 Master Repayment Contract between CAWCD and the United States. Reclamation declared the CAP water supply system (Stage 1) substantially complete in 1993, and declared the regulatory storage stage, or Plan 6 (Stage 2), complete in 1996. No other stages are currently under construction. Project repayment began in 1994 for Stage 1 and in 1997 for Stage 2. To date, CAWCD has repaid $548 million of CAP construction costs to the United States.

Recently, CAWCD and Reclamation successfully negotiated a settlement of the dispute regarding the amount of CAWCD's repayment obligation for CAP construction costs. This dispute has been the subject of ongoing litigation in United States District Court in Arizona since 1995. The CAWCD Board of Directors formally approved a settlement stipulation on March 2, 2000. Approval by the United States is currently pending while the settlement stipulation is being reviewed by several Federal agencies including the Department of the Interior, Department of Justice, and the Office of Management and Budget.

In its fiscal year 2001 budget request, Reclamation seeks $33,667,000 for the CAP. Of this amount, $25,829,000 is requested for the construction of Indian distribution systems. The balance, $7,838,000, is sought for other CAP activities, most of which would be at least partially reimbursable. Under the settlement stipulation, these costs would not affect CAWCD's repayment obligation.

Reclamation's Project Repayment Appendix to the fiscal year 2001 budget justification documents indicates that a "residual" amount of $357,437,702 is currently not covered under the repayment contract as ruled by the court in Phase One of the CAP repayment litigation and may not be repaid to the Federal Treasury. It further indicates that the remaining repayment obligation could be resolved in litigation, through settlement of the litigation, or through voluntary contract ceiling negotiation. Historically, CAWCD has challenged the adequacy of Reclamation's cost allocation procedure from which this residual amount was derived. CAWCD has also questioned Reclamation's authority to spend CAP appropriations in the absence of an amendatory contract to cover repayment of the reimbursable portion. CAWCD's testimony regarding Reclamation's fiscal year 2001 budget request for CAP assumes that final approval of the settlement stipulation by the United States is forthcoming and that the United States District Court approves the settlement.

Of the total $33,667,000 requested, $1,060,000 is earmarked to fund activities associated with implementation of a 1994 biological opinion of the U.S. Fish and Wildlife Service (FWS) pertaining to delivery of CAP water to the Gila River Basin, and $580,000 is for native fish activities on the Santa Cruz River. These funds are requested for construction of fish barriers ($1,080,000) and payments to FWS for nonnative fish eradication and native fish conservation ($560,000). In addition, Reclamation is seeking $70,000 to cover its non-contract costs. Historically, CAWCD has objected to Reclamation's continued spending in these areas. Both environmentalists and CAWCD have challenged the 1984 biological opinion in court, and that litigation is still pending. Although the settlement stipulation addresses many of CAWCD's financial concerns about the biological opinion, CAWCD still believes that the FWS opinion is unfounded and improper.

CAWCD continues to support appropriations necessary to ensure timely completion of all CAP Indian distribution systems. We are encouraged to note that Reclamation's fiscal year 2001 budget request of $25,829,000 for CAP Indian distribution systems is $14,676,000 higher than the fiscal year 2000 budget request for this item.

CAWCD also supports the continuation of funding for the Tucson Reliability Division. The requested $46,000 will allow planning work to continue and will assist Tucson in developing and implementing a plan to ensure adequate reliability for its CAP water allocation.

Finally, CAWCD again supports increased funding for Reclamation's West Salt River Valley Water Management Study. Reclamation's South/Central Arizona Investigations Program includes a $200,000 line item to support a continuing planning effort to study the integration and management of water resources in the West Salt River Valley, including the use of CAP water. CAWCD supports increasing this line item to $400,000 for fiscal year 2001.

CAWCD welcomes this opportunity to share its views with the Committee, and would be pleased to respond to any questions or observations occasioned by this written testimony.

PREPARED STATEMENT OF THE PORT OF HOUSTON AUTHORITY

On behalf of the Port of Houston Authority (PHA) and the nearly 205,000 Americans whose jobs depend upon activity at the Port of Houston, we extend gratitude to Chairman Domenici, and members of the subcommittee for the opportunity to submit testimony in support of several important navigation projects included in the U.S. Army Corps of Engineers Civil Works budget for fiscal year 2001.

For many years, the Port of Houston Authority has provided testimony to this subcommittee expressing appreciation for providing the funds necessary for the Houston Ship Channel (HSC) to remain fully functional by maintaining proper dredge depths and dewatering of dredge disposal sites. Most important, we are grateful for this subcommittee's support through the funding request for the required studies prior to the authorization of the improvement project to deepen and widen the Houston Ship Channel. We are deeply grateful for this support and are particularly excited about the partnership of this subcommittee, the Army Corps of Engineers and the Port Authority in marching forward with an insightful view of the future of one of our Nation's busiest port in foreign commerce.

We express full support of the fiscal year 2001 Corps of Engineers' budget request in the following amounts:

Houston Ship Channel (O&M)	$11,066,000
Houston-Galveston Navigation Channels (Construction)	53,500,000

Each of these funding requests is important to ensure the continuous flow of commerce through this very busy waterway.

THE PORT OF HOUSTON—ONE OF THE NATION'S BUSIEST PORTS

Port of Houston commerce generates more than $7.7 billion annually to the Nation's economy. An estimated 75,487 people work in jobs that directly relate to the Port of Houston activity and another 129,033 jobs are indirectly related to the port's activity. Moreover, the port generates nearly $482 million in customs receipts and more than $525 million annually in state and local taxes.

It is no exaggeration to say that the Houston Ship Channel is one of the most important economic lifelines between our Nation and the world. Houston's favorable geographic location provides easy access to the entire world business community through key ocean, land, and air routes. More than 100 shipping lines connect Houston with more than 700 world ports and 200 countries. Three major railroads provide cargo distribution throughout the United States with the intermodal link of more than 160 trucking lines. The Port of Houston forms the core of the Houston international community which includes more than 350 U.S. companies with global operations and Houston offices for more than 45 of the world's largest non-U.S. companies. In addition, Houston is the home of one of the largest consular corps in the Nation, with more than 72 foreign governments represented. These factors have made the Port of Houston a preferred gathering and distribution point for shippers transporting goods to and from the Midwestern and Western United States.

THE PORT OF HOUSTON—PROTECTING OUR NATION

During the Desert Shield/Desert Storm operation, the U.S. Government deployed 106 vessels carrying 458,342 tons of government cargo and military supplies from Fentress Bracewell Barbours Cut Terminal at the Port of Houston. In fact, between August of 1990 and October 1991 the Port of Houston was the second busiest port in the Nation in support of our troops. We are proud that the strategic location of

the Port of Houston allows us to play such an important role in the defense of our National and the world.

MODERNIZATION & THE ENVIRONMENT—SUCCESSFUL PARTNERSHIP

The Houston Ship Channel, which opened in 1914, is believed to be the result of the first-ever federal/local cost-sharing agreement. At that time, the channel was 18½ feet deep. It was subsequently deepened to its current depth of 40 feet with a width of 400 feet. This last improvement was completed in 1966. While Houston is one of our Nation's busiest ports, it is also one of the narrowest deep draft channels. As you can imagine, ships and shipping patterns have dramatically changed to meet the demands of world trade over the last 30 years. Yet, this busy waterway has not been widened or deepened to accommodate these changes. As the local sponsor for the Houston Ship Channel, the Port Authority began its quest to improve the channel in 1967. For reasons of safety, environment, and economics, the Houston Ship Channel is long overdue to be improved. The Port of Houston, and its partner in maintaining this federal waterway—the Corps of Engineers—are leading the way to a unique approach to addressing the environmental interests in the improvement of the Houston Ship Channel. In the late 1980s, the Port Authority and the Corps of Engineers joined with federal and state agencies to form and Interagency Coordination Team (ICT) in a cooperative effort to address environmental concerns with the project—a process advocated by environmental groups and various resource agencies. The ICT included: the U.S. Army Corps of Engineers (USACE), the U.S. Fish and Wildlife Service (USFWS), the U.S. Natural Resources Conservation Service (USNRC), the U.S. Environmental Protection Agency (EPA), the Texas General Land Office (GLO), Texas Parks and Wildlife (TPWD), the Texas Natural Resources Conservation Committee (TNRCC), the Texas Water Development Board (TWDB), the Galveston Bay National Estuary Program (GBNEP), National Marine Fisheries Service (NMFS), the Port of Galveston, and the Port of Houston Authority. Several committees were established by the ICT. One of the most important committees established was the Beneficial Uses Group (BUG). They charged the BUG, chaired by the Port, with developing a disposal plan to utilize dredged material in an environmentally sound and economically acceptable manner that also incorporated other public benefits into its design. Most important was the Port Authority's committed objective that the final plan would have a net positive environmental effect over the life of the project.

We are pleased to report that the ICT unanimously approved the beneficial use plan for disposal of dredged material from the HSC project as one that will have a net positive environmental effect on Galveston Bay, while significantly increasing the net economic benefits to the region and our Nation. Three basic principles guided the BUG in their efforts: dredged material should be considered a potentially valuable resource; development of an environmentally acceptable disposal plan is intrinsic to the approval of the project; and, the adopted disposal plan must have long term environmental benefits for the Galveston Bay system. The approach utilized by the BUG for Galveston Bay made this effort unique and precedent setting. What they attempted had never been done before. The BUG developed a preferred disposal plan rather than reviewing a proposal in a regulatory setting. The BUG also addressed one of the largest navigation projects in recent years (approximately 62 Million Cubic Yards (MCY) of new work material and an estimated 200 MCY of maintenance material over the next 50 years. Most important, the BUG actively solicited beneficial use suggestions from environmental interests and bay user groups whose collective ideas were given full consideration during the development of the recommendation plan. In fact, the community identified more beneficial uses than the material available from the project plus 50 years of maintenance dredging. The result was the identification of beneficial uses for the material to be dredged from the improvement project. The final plan includes the creation of 4,250 acres of marsh—a bird island, boater destination, restorations of two islands lost over the years due to erosion and subsidence. In addition, an underwater berm will be constructed to provide storm—surge protection and habitat.

PORT OF HOUSTON—LOOKING TOWARD THE FUTURE

The voters of Harris County in 1989 committed significant local funding to support these improvements. By a 2 to 1 vote, citizens approved a measure that will provide the local funding ($130,000,000) to deepen the channel to 45 feet and widen it to 530 feet. The Corps of Engineers and resource agencies involved in the ICT and BUG process have worked diligently to address all concerns and to develop a truly unique approach. The Port Authority heartily commends the cooperation and hard work of the Corps of Engineers and the state and federal agencies who have

participated in the process that has this project being applauded across maritime and environmental communities. This project is the first in history to have netted no negative comments, during the public review phase of the Supplemental Impact Statement (SEIS).

HOUSTON—GALVESTON NAVIGATION CHANNELS (CONSTRUCTION)

From fiscal year 1990 through fiscal year 1997, Congress has appropriated nearly $150,000,000 toward the project to deepen and widen the Houston Ship Channel. The Port Authority has contributed thus far over $54,835,776 to support this effort.

The fiscal year 1998 Administration request of $15 million was compatible with a seven to ten year construction schedule. It did not, however, accommodate the most economical and realistic schedule. Based on our cooperative and productive discussions with the Corps of Engineers, we are convinced that the optimal time line for completing the navigation portion of this project is four years. A four year schedule will accelerate the benefits of the project and reduce its costs. Each year in reduction construction time adds more than $81 million in benefits, reduces escalation costs by $4.562 million and drives down investment costs by more than $17 million. This subcommittee agreed that this fiscally sound reasoning was good public policy and accordingly provided $20 million to begin the construction on the optimum schedule.

In fiscal year 1999, the Administration slashed the Corps of Engineer's construction budget from the $1.4 billion level in fiscal year 1998 to $784 million in fiscal year 1999, representing a $700 million cut. This egregious cut in the funds available to the Corps resulted in a dramatic reduction in the Corps' original request to OMB of $60 million for construction in fiscal year 1999 on the Houston Ship Channel improvement project. The Administration's budget of $5.2 million would have crippled the Corps' ability to maintain the optimal four-year construction schedule which Congress effectively set in fiscal year 1998. This subcommittee agreed that the project should be completed at the optimum schedule and accordingly appropriated the $49,000,000 the Corps needed to remain on the schedule. In fiscal year 2000, the Administration and this subcommittee were in agreement on the $60,000,000 request from the Corps and the full $60,000,000 remained in conference.

This project is critical to the future of our Nation's busiest port in foreign tonnage. In a recent study conducted by the Texas Transportation Institute, the Port of Houston was evaluated as a prototypical next generation megaport. The port identified channel and berth depths as a major impediment to accommodating ships of the future. Further, in this era of environmental sensitivity, the Houston Ship Channel improvement project is a beacon of light. The improvements to the environment that will be reaped from this project cannot be ignored. The Port of Houston Authority's Demonstration Marsh, utilizing dredged material for beneficial uses, has been included in the Audubon Society's Christmas Bird Count. Over 155 species of birds have been identified on this marsh built entirely with material dredged from the Houston Ship Channel.

The Port Authority has a responsibility to the citizens of Harris County to operate the port in a cost-effective and efficient manner. We would not be fiscally responsible if we did not strive to realize the benefits of the project as soon as humanly feasible and at a most-efficient cost to the partners involved. We urge the members of this subcommittee to reject the recommended cuts in the Corps of Engineers' construction budget. In doing so and in reaffirming the subcommittee's commitment to our Nation's port system, we urge the subcommittee to include the $53,500,000 necessary to keep the Houston Ship Channel project on its current optimal, cost-effective schedule. We look forward to your leadership on this vitally important matter.

HOUSTON SHIP CHANNEL—OPERATIONS & MAINTENANCE

The Corps fiscal year 2001 request for operations and maintenance funding includes $11,066,000 for maintenance dredging of key stretches of the channel, mosquito spraying and protection of various disposal areas, and the maintenance of mooring buoys. These include dredging of the Fentress Bracewell Barbours Cut Container Terminal, the busiest container terminal in the Gulf; dredging of the entrance channel and flare of Bayport; dredging of Cedar Bayou; and, dredging of stretches of the main channel. The Port of Houston Authority, the users, and Houston Pilots recognize the need for the continued maintenance of the channel, as a critical safety component.

CONCLUSION

We greatly appreciate your past support and urge you to include the funds requested to fully support these projects in this busy federal waterway. These mainte-

nance projects, and particularly the funds necessary to construct the HSC improvement project at an optimal schedule are vital, not only to the Port of Houston's continued ability to move the Nation's commerce in a safe, efficient, and economical manner, but also, to ensure the competitiveness of the waterway in the world marketplace—an absolute necessity in this global economy.

PACIFIC NORTHWEST WATER RESOURCE PROJECTS

PREPARED STATEMENT OF THE PACIFIC NORTHWEST WATERWAYS ASSOCIATION

Mr. Chairman and members of the Subcommittee: My name is Glenn Vanselow. I am Executive Director of the Pacific Northwest Waterways Association. We appreciate the opportunity to present our views on appropriations issues to the Committee. The PNWA membership includes nearly 120 organizations and individuals in Washington, Oregon and Idaho. PNWA represents public port authorities on the Pacific Coast, Puget Sound, and Columbia/Snake River System; public utility districts, investor-owned utilities, electric cooperatives and direct service industries; irrigation districts, grain growers and upriver and export elevator companies; major manufacturers in the Pacific Northwest; forest products industry manufacturers and shippers; and tug and barge operators, steamship operators, consulting engineers, and others involved in economic development throughout the Pacific Northwest.

PNWA has a long history of working with the Committee and the U.S. Army Corps of Engineers (Corps) on projects of regional and national importance, sharing the challenge to maintain and develop our transportation infrastructure. Our members wish to thank the Committee for its support of Pacific Northwest transportation, hydropower and salmon enhancement programs and projects.

APPROPRIATIONS REQUEST

Fiscal year 2001 Civil Works Budget. The maintenance of channels and harbors serving all currently authorized Pacific Northwest deep draft and coastal ports is a top priority for PNWA. We believe that a level of funding closer to $4.960 billion is needed to maintain the integrity of the civil works program. We urge Congress to provide sufficient funding to meet national needs for both operations and maintenance (O & M) and new construction. The Administration's fiscal year 2001 budget request for navigation O & M and construction in Idaho, Oregon and Washington appears to be adequate. However, we believe that $4 million is needed to begin construction of the Columbia River Channel Deepening Project. This would fund federal share of (1) ecosystem restoration at Shillapoo Lake, Washington and elsewhere on Columbia River, and (2) engineering work during the construction phase.

Regional Navigation Operations and Maintenance.—We would like to thank the Committee for its previous support of navigation O & M (operations and maintenance) in the region's shallow, deep draft and inland navigation system.

Navigation is the least cost, most fuel efficient and least polluting mode of transportation. Navigation is the critical link that keeps the Northwest and the nation competitive in domestic and international trade and supports the commercial and recreational fishing industry. It provides significant numbers of jobs and other economic benefits both within the region and nationally. We support maintaining a strong federal role in planning, construction, operation, maintenance and funding of navigation on the inland waterways, deep draft ports and shallow draft ports. We ask the Committee for full funding for ongoing operations and maintenance (O & M) of the federally authorized navigation channels in the Columbia/Snake river system, the Oregon and Washington coastal ports and Puget Sound. Maximizing O & M is a cost-efficient means of fully utilizing the Federal Government's investment in channel operations.

Some 20 percent of the employment in the Northwest states is directly related to international trade. Navigation projects are among the few federal programs that are analyzed to ensure that economic benefits exceed the costs. Eliminating these programs would not be cost-effective.

Lower Columbia River Ecosystem Restoration.—PNWA encourages the Committee to appropriate $100,000 to beting a study that would focus on ecosystem restoration opportunities within the Lower Columbia River. A comprehensive ecosystem restoration study could serve as a catalyst to bring together and implement current efforts by a number of governmental and private organizations including the National Estuary Program, six state agencies from Oregon and Washington, four Federal agencies, recreation, ports, industry, agriculture, labor and commercial fishing, environmental interests and citizens.

Minimum Dredge Fleet.—We encourage the Committee to maintain the currently active hopper dredges operated by the U.S. Army Corps of Engineers and to reject any additional future set-aside for private dredges. We oppose placing the Corps hopper dredges in reserve, or placing artificial limits on the federal hopper dredges by directing increasing amounts of maintenance dredging to private dredges. Federal hopper dredge costs are artificially higher than necessary because of that set aside. We believe that Congress should reduce or eliminate the set aside to increase the efficiency of the Corps hopper dredges. We also encourage the Committee to find ways to make the Corps dredges less expensive to operate by examining recent increases in depreciation and plant increment payments.

We believe that the presence of the federal dredges keeps bids for dredging work competitive and lower in cost. We are concerned that the low number of private industry bids for work in our region could force dredging costs higher were it not for the availability of the federal dredges.

Salmon Recovery Decision Authority and Funding.—First, we support efforts to establish priorities for funding and implementation of fish and wildlife recovery projects in the Columbia River Basin Fish and Wildlife Program. Second, we support selected salmon recovery actions such as improved and enhanced smolt transportation, surface collection and other smolt by-pass facilities, fish-friendly turbine programs and habitat restoration and protection. These programs have been successful. These programs and others are included in the Administration's budget request for Columbia River Fish Mitigation which we support. Third, we oppose funding to carry out Phase II of the John Day drawdown study, and we do not support funding to study drawdown of McNary. Recently the Corps of Engineers recommended against continuing to study a drawdow of John Day because of the lack of benefit to salmon, and the economic cost. We support this decision. We encourage the Committee to direct funding toward fish recovery programs for which there is broad regional support.

We support Senator Slade Gorton's 1996 amendment to the Northwest Power Act, approved during consideration of the fiscal year 1997 Energy and Water Appropriations bill, which establishes a panel of scientists to establish priorities for funding and implementation of fish and wildlife recovery projects in the Columbia River Basin Fish and Wildlife Program. We hope that this, with the Independent Economic Analysis Board, will result in programs that will provide maximum biological benefits to listed salmon stocks and are more cost-effective.

Regional Governance.—The discussion about regional cooperation in developing salmon recovery objectives and programs in the Columbia Basin has been expanded significantly through the establishment of the Columbia Basin Forum, formerly known as the Three Sovereigns Forum. A memorandum of agreement establishing this new body was recently signed by the federal agencies, tribes and states. This process was created without consulting affected stakeholders, and the participants do not intend to include stakeholders in the consensus process. PNWA believes that effective fish and wildlife programs can be implemented without a new governance body. If a new management structure is necessary for addressing the Endangered Species Act, the Northwest Power Planning Council offers an appropriate model. Federal, state and tribal agencies and regional stakeholders should work cooperatively to develop solutions that maintain Congressional authority over navigation and the other authorized purposes of the federal projects and state authority over water and land use. If PNWA urges the Committee to support collaboration in the Columbia Basin within the existing authorities of the federal agencies, states and tribes, and, in the strongest terms possible, we urge Congress to retain exclusive authority over the authorized purposes of the federal projects within the Columbia Basin.

Hanford Cleanup.—We ask the Committee to continue to adequately fund the Department of Energy cleanup of 45 years of accumulated defense waste currently stored at the Hanford site. We recognize that defense waste cleanup is a long-term project that will be most cost effective and most rigorously pursued if Hanford is a viable, operating site. Therefore, we strongly urge the Committee to support a complete, ongoing Hanford scientifically and technologically based research and operations program in order to ensure long-term funding for waste cleanup. PNWA also supports a complete and ongoing scientifically and technologically based research and operations program, including the restart of the Fast Flux Test Facility for the joint missions of national defense and medical research and isotope production to meet the demands for more effective cancer treatments.

Conclusion.—On behalf of nearly 120 members from throughout the Pacific Northwest, we thank the Committee for giving us this opportunity to review a number of issues important to the environmental and economic prosperity of our region.

PREPARED STATEMENT OF THE NORTHWEST POWER PLANNING COUNCIL

The Northwest Power Planning Council appreciates the opportunity to submit written testimony in support of the Clinton Administration's fiscal year 2001 budget request for programs under the jurisdiction of the Energy and Water Development Subcommittee.

The Council was established by Congress in 1980, and created as an interstate compact by the States of Idaho, Montana, Oregon and Washington. Its purpose is to develop a 20-year regional electric power plan to assure for the Pacific Northwest an adequate supply of power at the lowest possible cost, and to develop a major program to protect and rebuild fish and wildlife resources harmed by hydroelectric development in the Columbia River Basin. The Council carries out its responsibilities under the Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Northwest Power Act), Public Law 96–501.

Three federal agencies under the jurisdiction of the Subcommittee, the U.S. Army Corps of Engineers, Bureau of Reclamation, and the Bonneville Power Administration, administer programs critical to the Columbia River Basin. The Council works closely with all three agencies in fulfilling its statutory responsibilities.

U.S. ARMY CORPS OF ENGINEERS

Columbia River Fish Mitigation Program

The Council continues to support the Corps' Columbia River Fish Mitigation (CRFM) Program. The focus of the program is to reduce mortality of both juvenile and adult salmon and steelhead during their migration through the Corps' eight projects and reservoirs on the mainstem Columbia and Snake rivers. The Corps' fiscal year 2001 budget proposal for the program is $91 million, and includes funding for several critical studies and activities that are important to recovering, rebuilding and maintaining the anadromous fish runs in the Columbia River Basin. The Council supports the Corps' full $91 million budget request.

We support the full budget request even without knowing the final outcome of the Corps' Lower Snake River Juvenile Salmon Migration Feasibility Study, Draft Feasibility Report and Environmental Impact Statement, and Record of Decision that will be signed later this year. The Corps' draft feasibility study and EIS, which was released recently for public comment, examines three possibilities for the lower Snake River: (1) breaching all four of the Corps' lower Snake River dams, (2) leaving the dams in place and maximizing opportunities to transport juvenile salmon and steelhead around the dams, and (3) maintaining status quo operations at the projects.

Although the Corps' final recommendation is not known at this time, it is clear that regardless of what decision is made—to breach dams or not to breach—significant amounts of federal appropriations will be required to improve fish survival in the lower Snake River. If the Corps recommends breaching, significant sums will be required for planning, engineering, design and construction activities, as well as ongoing fish passage-related activities at the Corps' four dams on the lower Columbia River. On the other hand, if the Corps recommends not breaching the dams, efforts to increase juvenile and adult survival around all of those projects will continue. In either case, the Corps' program must be maintained at a high level to accomplish the objective of rebuilding and mitigating for salmon and steelhead runs in the Columbia and Snake river basins.

Last year the Council, with the assistance of the Independent Scientific Advisory Board (ISAB), completed its Review of the U.S. Army Corps of Engineers' Capital Construction Program, which the Energy and Water Development Subcommittees requested in their fiscal year 1998 Conference Report. The Council's final report addressed several aspects of the CRFM Program, including surface bypass systems, adult passage improvements, gas abatement measures, and other issues. In examining the Corps' initial priorities for the CRFM Program in fiscal year 2001, it appears that the funding proposals are generally consistent with the recommendations in the Council's report.

For example, the Corps currently expects to spend approximately $16 million for surface bypass-related work during fiscal year 2001. These activities would occur at several of the projects including Lower Granite Dam ($9.5 million), The Dalles Dam ($3.6 million), and Bonneville Darm ($2.5 million). In last year's report, the Council emphasized the need to continue efforts to develop effective surface bypass facilities that achieve the 80-percent fish passage efficiency standard for all species and stocks. While more than 20 years of work to improve turbine intake screen technology has not resulted in that level of efficiency, the Council's review urged that other technologies, including surface bypass facilities, be pursued aggressively.

Surface collection and bypass continue to show promise; however, uncertainties remain regarding the level and changes in survival of juvenile salmon that can be provided by surface bypass facilities. Given the uncertainty, all juvenile passage alternatives should be evaluated against the baseline of spill, since spill more closely mimics natural processes than any other bypass alternative. Spill should be considered the alternative when improvements anticipated from other bypass technologies do not meet passage goals.

Another area emphasized by the Council and the ISAB in last year's review of the CRFM Program was adult salmon and steelhead passage. The report concluded that the subject of adult passage at Columbia and Snake river dams has not been dealt with adequately, that returning adults to spawning grounds may be more important than juvenile survival, and that the Corps' planned site-specific measures may be supportable but probably are not sufficient to ensure that adult spawning migrations are unimpeded. Accordingly, the Council is pleased to see that for fiscal year 200 1, the Corps is intending to spend over $23 million on adult passage improvements, approximately double the amount being spent currently. These improvements are primarily in the form of improvements for auxiliary water supply systems, adult ladder improvements, and adult channel dewatering projects at several projects, including Lower Monumental Dam ($5 million), Ice Harbor Dam ($4.4 million), The Dalles Dam ($5.5 million), Bonneville Dam ($1 million), and other systemwide improvements ($3 million).

The Council also supports aggressive efforts to reduce dissolved gas levels in the Columbia and Snake rivers. In last year's report, the Council recommended that the Corps' program is important for rectifying supersaturation in the river system, and that it should continue with high priority. Attainment of the Clean Water Act total dissolved gas standard of 110 percent throughout the hydropower system will be difficult under involuntary spill conditions with the majority of dams in place. Therefore, the Corps' current program of pursuing structural modifications to nearly all the dams to reduce gas supersaturation should have benefits to salmon and other components of the ecosystem. In fiscal year 2001, the Corps proposes to spend nearly $6 million on gas abatement efforts, about the same as the current year.

Developing fish passage systems is not an exact science, but one that is continually evolving. As we increase our knowledge of the behavior patterns of anadromous, fish, and river processes, and improve our understanding of the need to protect biodiversity, we will develop more effective fish passage alternatives. These alternatives likely will be implemented to benefit the range of species and stocks in the river, and may result in providing multiple passage solutions at individual projects. They also will reflect that the best passage solutions are those that take into account and work with the behavior and ecology of the species using the river system.

The Council realizes that the Columbia River Fish Mitigation Program has enjoyed significant support from the Subcommittee for several years. Continuation of the program at its full capability is necessary to ensure that critical improvements to the system are implemented, and important studies and tests completed so that fish survival can improve.

Willamette River Temperature Control, Oregon

The Willamette River Basin is located in northwestern Oregon. During the last 40 years, 13 Corps of Engineers reservoirs have been constructed in the basin to control floods, generate electricity and provide water for navigation, irrigation, improved water quality, recreation, and fish and wildlife. Studies over the last 16 years have demonstrated that the temperature at which water is released from these reservoirs is a key limiting factor for survival of anadromous and resident fish in the Willamette basin.

Local, state and federal agencies, including the Council, have been seeking modification of water temperature in the McKenzie River downstream from Blue River and Cougar reservoirs to achieve more beneficial temperatures for wild spring chinook salmon, bull trout and rainbow trout. The Corps' feasibility study for the project was completed in 1995. An Environmental Impact Statement was completed, and the Division Commander signed a Finding of No Significant Impact on April 24, 1996. Over a year ago, Willamette spring chinook and winter steelhead were listed as threatened by the National Marine Fisheries Service under the Endangered Species Act; the last significant wild stock of spring chinook in the Willamette is in the McKenzie River. The current estimated cost to install multi-level intake towers at the two projects is more than $70 million.

Due to cost limitations associated with the project's authorization, the Corps' current focus is on the Cougar Lake reservoir intake tower, which.has a total estimated cost of more than $50 million. Last year, Congress appropriated the initial funds

to begin construction of the project. In its fiscal year 2001 budget request, the Corps is seeking $8.2 million to continue construction activities. The Council supports this project and the requested funding level, and urges the Subcommittee to include it in its fiscal year 2001 funding recommendations.

BUREAU OF RECLAMATION

Yakima River Basin Water Enhancement Project

The Council supports the Administration's fiscal year 2001 request of $11.056 million for the Yakima River Basin Enhancement Project. The funds would be used for water acquisition ($4.3 million), implementation grants ($4.448 million) and for feasibility studies relating to grants ($1.0 million).

The Project was authorized by Congress in 1994 and encourages activities to reduce water diversions by improving conveyance and distribution systems, and by changing water operations and management on farm irrigation facilities. Conserved water is used to increase instream flows and supplement drought-year irrigation needs. In addition, Yakama Nation water supply facilities will be improved and tribal economic development, fish and wildlife, and cultural programs will be enhanced.

Just last month, seven irrigation districts identified water conservation measures totaling $200 million that could be funded under the project's authorization. If all the plans were implemented, water savings could add up to as much as 300,000 acre-feet. As a requirement of participation, two-thirds of the savings would be left in the river for fish and wildlife. The remaining one-third could be used for irrigation purposes, so long as the number of irrigated acres in the basin is not increased.

Water managers estimate the successful implementation of the conservation program will reduce out-of-stream diversions by as much as 165,000 acre-feet and increase target flows for instream purposes. Conservation measures also will improve the reliability of irrigation water supply, particularly for irrigation districts that receive less than their full water supply during poor water years.

Columbia-Snake River Salmon Recovery Project

The Administration has requested $4.622 million in fiscal year 2001 for its Columbia-Snake River Salmon Recovery Project. This represents a reduction of $4.878 million from the current year funding level of $9.5 million. The Council considers the Administration's request to be the minimum acceptable level for the program, and would support maintaining the current year's appropriation of $9.5 million. The proposed funds for fiscal year 2001 will be used for water acquisition ($3 million), Endangered Species Act compliance ($1.132 million) and fish passage facilities at the Burbank #2 and #3 pumping plants.

The Council believes the Bureau should have sufficient funds to implement all measures required under the new Biological Opinion that the National Marine Fisheries Service will put in place next year. It is questionable that the requested level of $4.622 million will be adequate to ensure implementation, especially in the event that expensive measures, such as water acquisition, are included in the Biological Opinion. In addition, the requested funding level provides the Bureau with insufficient flexibility to react quickly to any unforeseen opportunities that may arise during the course of the year to purchase or lease water from willing sellers, in accordance with state water law. Such opportunities, if lost, may not present themselves again soon.

BONNEVILLE POWER ADMINISTRATION

The Bonneville Power Administration is the primary implementer of the Council's Columbia River Basin Fish and Wildlife Program. In the fall of 1995, the Administration and Congress agreed on a fixed budget for Bonneville's fish and wildlife recovery efforts in the Columbia River Basin. Under the terms of that agreement, which was further defined and formalized in September 1996 in a memorandum of agreement (MOA) signed by the secretaries of the Army, Interior, Commerce and Energy, Bonneville will incur costs, on average, of $435 million per year ($252 million in actual dollar expenditures and $183 million in lost hydropower revenues and power purchases) for six years for fish and wildlife activities. These funds fall under a number of categories, including direct expenditures on fish and wildlife projects, power purchases, reimbursements of appropriated funds to the Corps of Engineers and Bureau of Reclamation, capital repayment and foregone revenues.

For fiscal year 2001, Bonneville estimates its total fish and wildlife budget will be $421.8 million, with $105 million for its direct fish and wildlife project expenditures, $49.2 million to reimburse other federal agencies for appropriated expenses, $102.8 million to repay the Federal Treasury for appropriated capital investments, and $164.8 million for foregone revenues and power purchases.

For several reasons, including above-average precipitation and lower-than expected annual appropriations for the Corps of Engineers' Columbia River Fish Mitigation Program, Bonneville's annual fish and wildlife expenditures have averaged less than the originally anticipated $435 million. As a result of lower Corps appropriations alone, Bonneville has underspent its capital repayment category by nearly $200 million. The Council believes that funds not spent during the MOA period should remain reserved for fish and wildlife purposes in the next period. The Council intends to work with Bonneville, the tribes and others in the region to arrive at an acceptable science-based plan for effectively utilizing these funds.

Thank you for the opportunity to share our views with you. We sincerely appreciate the thorough consideration that this Subcommittee has given to the needs of the Pacific Northwest and the Columbia River Basin over the years.

PREPARED STATEMENT OF THE DESCHUTES BASIN WORKING GROUP

SUMMARY

The Deschutes Basin Working Group, dba the Deschutes Basin Resources Conservancy (DRC), is a non-profit, private corporation established in Oregon in 1996. In September 1996, Congress enacted and the President signed Public Law 104–208, which included S. 1662, the Oregon Resources Conservation Act. Section 301(h) (Division B, Title III) of Public Law 104–208 authorizes $1.0 million per year through 2001. The DRC is limited to spending 5 percent of any appropriation on administration.

In fiscal year 1999 and fiscal year 2000, Congress appropriated $500,000 to the Bureau of Reclamation to support the DRC. The DRC is using these funds to implement projects to improve water quality and quantity in the Deschutes Basin. Water projects are crucial in the Deschutes Basin where steelhead and bull trout are listed as threatened and Fall Chinook are proposed for listing under the Federal Endangered Species Act. We are requesting that $1,000,000 be provided in the fiscal year 2001 Budget for the Bureau of Reclamation to continue to carry out our program.

From January 1999 to March 2000 the DRC supported 17 projects in the Basin that leveraged $843,757 of its funds to complete $3,344,535 in on-the-ground restoration projects. These projects include: piping irrigation district delivery systems to prevent water losses; securing instream water rights to restore flows to Squaw Creek; providing riparian fences to protect riverbanks; working with private timberland owners to restore riparian and wetland areas; and seeking donated water rights to enhance instream flows in the Deschutes Basin.

The DRC is governed by a diverse group of directors from private and public interests from the region. It is a community-based, cooperative endeavor that believes economic progress and natural resource conservation need to work together to achieve success.

The DRC seeks voluntary actions based upon contracts and compensation for property and services. The DRC does not seek, nor is it authorized, to impose regulatory mandates through legal or political action.

1999 PROJECTS

No-Till Demonstration Project—$50,000

A small-grain farmer from the Juniper Flats region of Wasco County has agreed to use his farm as a no-till demonstration site for at least five years. Initially, the farmer will convert 900 acres of traditional tillage cropland to no-till methods. Wasco County SWCD proposes to cost-share with the farmer for three years to help with startup expenses and risk management. In return, the farmer will allow the SWCD to conduct educational and outreach activities on his farm. The SWCD will conduct field days, tours and neighborhood presentations to increase awareness of no-till methods and share results with other farmers in the region. During a series of neighborhood meetings, volunteers will be sought for a watershed council to cover the White River and Juniper Flat regions. The DRC is also exploring the opportunities for developing tradable carbon credits from this project.

Tumalo Irrigation District/Bend Feed Canal—$100,000

This project eliminates the existing Flume No. 4 and unlined open channel section between Pipeline No. 2 and No. 3 of the Bend Feed Canal, saving an estimated 3 to 4 cfs in water loss. The flume and channel sections will be replaced with an estimated 78-inch diameter water tight pipe. The complete 4 year, 13, 750-foot project plan will save at least 20 cfs. A prorated share of 5 cfs minimum has been agreed to by the U.S. Bureau of Reclamation for return to the Tumalo Creek which cur-

rently has no instream water right. The total project will increase fish habitat, significantly reduce water loss and increase public safety.

Pringle Falls—$20,000

The project places 225 large trees in the main channel of the Deschutes River within a 3.3-mile reach below Pringle Falls, improving fish habitat and decreasing the potential for stream bank erosion. Traditionally, large woody debris protected the riverbanks from the swiftly moving water. In its absence, erosion was occurring at an accelerated rate. The placement of trees and riparian plantings should improve water quality by reducing sedimentation and turbidity of the river.

Central Oregon Irrigation District Alfalfa Piping—$58,924

The Alfalfa area of the Central Oregon Irrigation District consists of large irrigated parcels and transmission losses are high due to pea-sized gravel beneath the shallow topsoil. This project replaced approximately 15,860 feet of open ditch with pipe. The project saves 3.09 cubic feet per second or 6.13 acre feet of water per day. The project has been completed and funds have been allocated.

Annual Water Leasing Program—demonstration only

The DRC is working with water users in targeted areas for water rights donations or sales to improve instream flows. The program began November 1998 by meeting with each irrigation district manager to introduce the leasing program and the process for transfers. In early 1999 water rights holders were contacted requesting the user's water donation. This program enables water right holders to protect their water right by leasing and it improves Deschutes flows. About 54 acres of irrigation water were leased in 1999. The program will continue in 2000.

Camp Polk Meadow—$50,000

The DRC and the Deschutes Basin Land Trust are teaming up to restore and conserve a rare wetland/wet meadow habitat. Portland General Electric purchased Camp Polk Meadow and donated it to the land trust. The property has about 385 acres, roughly 150 are bottom land. The project contains between 1.25 and 1.5 miles of Squaw Creek, at least six springs and one natural bog.

Central Oregon Irrigation District F1 Lateral Piping—$30,000

For the most part the irrigation canals in the Upper Deschutes Basin are unlined and have been dug in porous, volcanic soils, so water losses through percolation can be quite high over the long distances that irrigation water must travel from the point of diversion to the farms. The DRC and Central Oregon Irrigation District propose to install roughly 3,960 feet of pipe, an inlet structure, an outlet structure, four clean-outs and four diversion structures. COID figures to conserve .29 cfs or .57 an ac/ft. Projected over a 180 day period, this calculates to 102.6 ac/ft water conserved. One half of the conserved water from this project will be returned to instream flows in the Deschutes River. This project is an important demonstration of how water can be conserved to benefit both the irrigation district and its water users and the Deschutes ecosystem. This project is underway.

Confederated Tribes of Warm Springs Riparian Fencing—$76,500

The DRC and the Confederated Tribes of the Warm Springs Indian Reservation of Oregon are partners on a project to protect riparian areas in the Deschutes Basin's Eagle Creek, Skookum Creek and the mainstem river. The project constructs fence for livestock exclosures, places cattle guards at road crossings and installs solar pumps to provide animals water away from the riverbank. One of the DRC's primary goals is to improve water quality. Healthy, functioning riparian areas are critical to improving water quality in the basin. Riparian vegetation provides fish and aquatic habitat, stream shading to reduce water temperatures, bank stability and a filter for nutrients and sediments entering the water. This project is especially important for the habitat of Bull Trout and steelhead that are listed as threatened and Fall Chinook that are pending listing under the Federal Endangered Species Act. This project involves voluntary cooperation by the tribal grazing group allottees. The Warm Springs Tribes are involved in various other projects to improve stream conditions both on and off the reservation. This project is a part of a larger effort to improve flows and water quality for fish and wildlife. Funds have been allocated and two of the four sections of fence have been constructed. The remaining fence will be constructed Spring of 2000. NEPA has been completed and the DRC is waiting for a monitoring plan.

Swalley Irrigation District Tailend—$10,000

This Swalley Tailend Project links the end of Swalley's lateral with COID's A–21 lateral of the Pilot Butte Canal. The project will direct water in excess of the

Swalley system's demand to COID's lateral. The system will be designed to handle an average of 3 cubic feet per second (cfs) with the ability to accommodate flows up to 6 cfs. This project directly addresses the DRC's goal to improve water quality and quantity. It will stop potentially polluted, warm water from directly entering the Deschutes and it will allow this water to be used by COID, which is credited for this water. NEPA has been completed and funds will be allocated upon billing.

Thompson Ditch Conservation Project—$50,000

The DRC is working with the Squaw Creek Irrigation District and landowners to relocate a diversion for permanent increased instream flow and riparian restoration. The project eliminates the existing Thompson Ditch. Subsequently returning 1 cfs of 1885 senior water right and 1 cfs junior 1900 water right to the stretch of Squaw Creek between SCID's diversion and the proposed diversion point on the Deggendorfer property. This change will also eliminate water losses in the existing ditch. The flood irrigation system now in use will be changed to a sprinkler system. One-half of the conserved water will be permanently returned to instream flows. Project construction is underway and scheduled for completion in the Spring of 2000.

Mack's Canyon—$15,460

This project focuses on the entire watershed from ridge top to ridge top, starting at the top and working down. Several treatment will be used including; Terraces, Water and Sediment Control, Basins (WASCOB), Sediment Basins, and Spring Developments. NRCS is completing NEPA. Initial phases may start this fall while the main portion of the project will be completed in the Spring.

2000 PROJECT

Summaries 2000 Projects Camp Polk Water Purchase—$50,000

Oregon Water Trust (OWT) and the DRC will acquire .99 cfs of irrigation rights on Squaw Creek for a permanent transfer to instream flows. The water rights will complement the earlier purchase of 1.81 cfs of Squaw Creek water in 1998 and 1999. Squaw Creek currently supports populations of redband trout, bull trout and spawning kokanee from Lake Billy Chinook. Prior to the construction of the dams, Squaw Creek was one of the major salmonid producing tributaries in the Deschutes basin. The various proposed relicensing options for the Pelton-Round Butte dams in 2001 include provisions for the passage of anadramous fish, which will reopen Squaw Creek to populations of wild Chinook and steelhead, making the restoration of stream flows critically important.

Crooked River National Grasslands Water Quality Project—$20,000

The Grasslands project is aimed at decreasing the turbidity and sedimentation of lower Squaw Creek. Funded activities include the hydrological closure of 1.75 miles of the lower end of Forest Service road 6370, the closure by gating of the upper 2.5 miles of road 6370 and the closure and rehabilitation of five off-road hill climbs in the vicinity. Other components of the project involve relocating the Alder Springs Trail Head approximately 0.8 miles north of the intersection of Forest Service road 6360 and 6370 to the ridge just west of 'Three Pines'. A new trail approximately 0.75 miles long will be constructed along the rim with views of Squaw Creek and the Cascades. The new trail segment will join the existing trail above Dry Falls. A new spur trail approximately 0.25 miles will be constructed from Three Pines to the Old Bridge site on Squaw Creek. The existing trail in the drainage bottom will be waterbarred. Each of these applications will help protect and enhance a sensitive reach of creek that supports numerous aquatic species including the ESA listed bull trout.

Crooked River Riparian Fencing—$34,100

With funding from the DRC, the Crooked River watershed council's riparian enhancement project will improve livestock management, protect riparian and stream channel areas and enhance native vegetation on over 25 miles of stream within the sub-basin. Nine landowners have agreed to participate in the program, implementing riparian exclosures on 15 miles of stream and conducting plantings in 18 miles of protected riparian areas. Exclusion of livestock from riparian areas is one of the most effective and practical means of protecting riparian areas. The enhancement of riparian vegetation communities in degraded areas provides a major step towards improving overall riparian and stream channel function.

Squaw Creek Irrigation District (SCID) Cloverdale Piping Project—$260,000

The project will replace approximately 15,840' of open ditch with pipe. The estimated water savings amounts to 4 to 5 cfs or 8 to 10 acre-feet per day. Three cfs or one-half of the conserved water, whichever is greater, will be transferred back instream after project completion. This project represents one of several DRC partnerships aimed at increasing instream flows in Squaw Creek. The DRC and other local organizations place great importance on Squaw Creek due to its once abundant steelhead spawning habitat.

Tenmile Riparian Fencing—$7,013

With the help of the DRC and the Trout Creek watershed council, a private landowner will construct 4.5 miles of riparian fencing around a high mesa pasture that will exclude livestock from grazing in approximately 3 miles of Tenmile Creek, 2 miles of Trout Creek, and 3 miles of the Deschutes River. The construction of new riparian fencing and the elimination of a previously used watering gap complements the Bureau of Land Management and Oregon Department of Fish and Wildlife's efforts to manage grazing along Tenmile Creek in a manner that is conducive to fish and wildlife values. Additionally, the Trout Creek watershed council will be seeking funds from the Oregon Watershed Enhancement Board to construct offsite watering for livestock at this site. This project serves to build understanding and educate the community by providing a valuable example of environmental protection of private lands by non-regulatory means.

Mack's Canyon Year II—$15,460

This project focuses on the entire watershed from ridge top to ridge top, starting at the top and working down. Several treatments will be used including; terraces, water and sediment control basins (WASCOB), sediment basins, and spring developments. NRCS is completing NEPA. Initial phases may start this fall while the main portion of the project will be completed in the spring.

BACKGROUND

In 1989, the Environmental Defense Fund (EDF) and the Confederated Tribes of the Warm Springs Reservation began a cooperative project to reconcile on-reservation ecological and economic conflicts. In late 1992, the Tribes and EDF expanded the scope of the project to include the entire Deschutes Basin. It was agreed that the initial focus would be on river flows and water pollution. Flow-deficient stream reaches and excessive water pollutant loads could only be mitigated by identifying and reducing existing water diversions and pollution discharges. At the same time, a high value was placed on being "good neighbors" to other landowners and resources users within the Basin. Positive incentives for changes in resource uses were emphasized instead of costly and divisive political and legal conflicts. Solutions employing economic incentives, such as water rights and pollution allowance marketing, were introduced and experiences elsewhere in the West were reviewed.

A key forum for this community dialogue, the "Ad Hoc Deschutes Group", was formed. The 14-member Ad Hoc Group had representatives of all economic sectors in the Basin. The irrigation community holds the most water rights and reservoir storage and therefore has the greatest impact among resource users on the pattern and amount of river flows. At the same time, water quality degradation stems from a diverse set of land uses driving non-point water pollution. An important part of the project was to assure that the federal interests in the Basin were addressed along with those of the tribes, resource users, and local and state governments.

The Ad Hoc Group recognized the need for a private organization with ecosystem-determined goals and methods based on positive incentives, consensus, and local governance. Since approximately half of the Basin's land area is managed by federal agencies it was clear that such a private organization would need the capacity to partner on projects with the federal agencies to be truly ecosystem and basinwide in scope. In March, 1996, Senator Hatfield introduced S. 1662 authorizing federal agencies to work with this private organization, known as the Deschutes Basin Working Group. Title III of the Oregon Resource Conservation Act of 1996, signed by the President in September, 1996, authorizes the following:

—Federal agencies to work with the private Deschutes Basin Working Group, dba Deschutes Basin Resources Conservancy (DRC)

—Secretaries of Interior & Agriculture to appoint DRC board members for 3 year terms

—Federal participation with DRC in ecological restoration projects on federal and non-federal land and water with 50–50 cost share

—Five year startup authorization of $1.0 Million a year federal fund; 50/50 cost share with DRC

—Emphasize voluntary market-based economic incentives

The Deschutes Basin Working Group, later to adopt an operating name of the Deschutes Basin Resources Conservancy (DRC), has the goal of implementing on-the-ground projects that enhance the quality of the region's natural resources and add value to its economy.

Its board consists of nine members from the Basin's private sector; hydropower, livestock grazing, recreation/tourism, timber, land development, irrigation (2), environmental (2), and two members from the Confederated Tribes of the Warm Springs Reservation. In addition to the private board members there are two board members appointed from the Departments of Interior and Agriculture, two board members representing the State of Oregon, and four members representing local governments within the Deschutes Basin.

The DRC will receive funds through tax-exempt donations from individuals, businesses, and corporations, including philanthropic foundations, and from government agencies seeking project development assistance or collaboration. It will seek to develop income from direct sources such as fee-for-service.

PREPARED STATEMENT OF THE OREGON WATER RESOURCES CONGRESS

Dear Chairman Domenici and Members of the Subcommittee: Mr. Chairman, Members of the Subcommittee, I am Jan Lee, executive director of the Oregon Water Resources Congress (OWRC). The OWRC represents irrigation, water control, drainage and water improvement districts, private ditch and irrigation corporations, cities and counties, individual farmers and ranchers statewide as well as having agribusiness associates as members.

I am writing to urge your support for the attached list of projects in the Bureau of Reclamation's fiscal year 2001 Budget Request. The funding for these projects represents a valuable commitment to meeting the needs of our member organizations at a time when many are confronted with the problem of how to meet water delivery needs for their district populations while at the same time addressing environmental and Native American requirements. There are particular projects like the Deschutes Ecosystem Restoration project and the Klamath project in Southern Oregon that typify this balance.

I would also like to request that you provide the write-in funding for the Tumalo Irrigation District, Bend Feed Canal, the two Umatilla Boundary Change Environmental Assessment projects and the Willow Lake Natural Treatment system project that appear on our list.

OWRC continues to be concerned about the inadequate funding for the Oregon Water Management and Technical Assistance program, the Efficiency Incentives program and the Water Management Conservation Program. These are valuable programs for water users to address the combination of water/environmental/Native American/growth related issues in the State.

OWRC has also been following the work of the National Drought Policy Commission. OWRC would like the Subcommittee to consider increasing the funding for the Bureau of Reclamation drought assistance program up to $5 million so our water users are in the position to benefit from the recommendations of the Commissions report.

Thank you for considering our requests and we look forward to favorable action by the Subcommittee.

Projects and Programs in fiscal year 2001 Bureau of Reclamation Budget that OWRC Supports;	
Crooked River Project	$691,000
Deschutes Ecosystem Restoraton Project	500,000
Deschutes Project	431,000
Grand Ronde Water Optimization Study	50,000
Klamath Project	11,185,000
Oregon Investigations Program	601,000
Rogue River Basin Project, Talent Division	883,000
Tualatin Project	320,000
Eastern Oregon Projects	451,000
Tualatin Valley Water Supply Feasibility Study	100,000
Umatilla Basin Project (Phase III)	100,000
Umatilla Project	2,294,000
Broader Programs:	
Columbia and Snake River Salmon Recovery Project	4,622,000
Endangered Species Recovery Implementation	1,354,000

Requests for New Money:	
Tumalo Irrigation District, Bend Feed Canal	2,000,000
Umatilla Boundary Change Environmental Assessment (Hermiston)	100,000
Umatilla Boundary Change Environmental Assessment (West Extension)	50,000
Willow Lake Natural Treatment System Project	1,000,000

PREPARED STATEMENT OF THE HERMISTON IRRIGATION DISTRICT

Mr. Chairman, Members of the Subcommittee, I am Chuck Wilcox, Manager of the Hermiston Irrigation District, in Hermiston, Oregon. The District is writing to request that $100,000 be provided on a non-reimbursable basis in the fiscal year 2001 Budget for the Bureau of Reclamation so the Hermiston Irrigation District can complete the Environmental Assessment process for a proposed boundary change as a part of the Umatilla basin plan

For the past several years, our district, as well as other irrigation districts in the Umatilla basin have asked the Bureau of Reclamation to approve new boundaries to include acres that receive Federal water. The Bureau has consistently failed us in moving forward towards resolving this need. Completion of this process would solve the problem of having to use interim water service contracts from the Bureau of Reclamation and allow farmers in the area to make more timely and cost effective decisions regarding crop decisions for the planting and irrigation season.

If language could be included in the report for the Energy and Water Appropriations bill indicating that within the Water and Related Resources Program, the Bureau was to provide the $100,000 for this work on a non-reimbursable basis, the District would be very appreciative.

Thank you for considering our request and we look forward to favorable action by the Subcommittee.

PREPARED STATEMENT OF THE TUMALO IRRIGATION DISTRICT

Mr. Chairman, Members of the Subcommittee, I am Elmer McDaniels, Manager of the Tumalo Irrigation District in Bend, Oregon. The Tumalo Irrigation District was founded in 1914 and currently serves about 28 square miles with 8,100 irrigated acres between Bend and Sisters, Oregon, on the east slope of the Cascade Mountains.

The District appreciates the $200,000 that was provided for design work in the fiscal year 2000 Energy and Water appropriations bill for our Bend Feed Canal Project. The total cost of this project is $4,000,000 with half of the money coming from the District and the other half from the Bureau of Reclamation. We are ready to move forward with construction work this year on the project and would like to request that your subcommittee provide $2,000,000 in the Bureau of Reclamation's budget for their share of construction funds for fiscal year 2001.

Completion of this project will bring about an increased system reliability for the District, a substantial safety increase for the citizens in the area as a result of our putting an existing open canal into pipe and an increased water conservation benefit for the environment in the Deschutes Basin as a result of the piping of the canal.

Thank you for considering our request and we look forward to favorable action by the Subcommittee.

PREPARED STATEMENT OF THE FORT PECK ASSINIBOINE AND SIOUX TRIBES

FISCAL YEAR 2001 APPROPRIATIONS REQUEST

The Fort Peck Assiniboine and Sioux Tribes respectfully request funds to continue planning and begin construction of the Fort Peck Reservation RWS, Montana, in the amount of $435,000 as set out below:

Fiscal Year 2001 Appropriation Request—Fort Peck Assiniboine and Sioux MRI System Dry Prairie RWS

Item	*Budget*
Planning Activities:	
Tribal Administration	$115,160
Tribal Technology	7,100
Dry Prairie Administration	61,020

Fiscal Year 2001 Appropriation Request—Fort Peck Assiniboine and Sioux MRI System Dry Prairie RWS—Continued

Item	*Budget*
Environmental Assessment	136,440
Conceptual Value Engineering/FER	115,590
Total	435,310

The Tribes are appreciative of the work by this Subcommittee on the project previously. In fiscal year 1993 and fiscal year 1994, $350,000 were appropriated, and in fiscal year 1997 through fiscal year 1999, $810,000 were appropriated for planning purposes.

PROPOSED ACTIVITIES

This project, which includes all of the Fort Peck Indian Reservation in Montana and the Dry Prairie portion of the project outside the Reservation (see map), was authorized by the full Senate in the closing days of the last session. Authorization by the full House is anticipated in this session.

The budget request provides $435,000 for planning activities. It provides for continued work to amend and complete the Final Engineering Report to address both federal and state requirements for the report. Value engineering will be performed on the Final Engineering Report in an effort to lower costs of the project without diminishing function. The budget request provides for completion of the NEPA requirements through the preparation of an environmental assessment. No significant environmental impacts are expected, and an environmental impact statement is not contemplated. This judgment is based upon prior work with state and federal agencies in advance of the preparation of the environmental assessment.

STATUS OF PROJECT PLANNING

The work products completed to date by the Bureau of Reclamation include a Needs Assessment and Feasibility Report within the boundaries of the Fort Peck Indian Reservation. The Fort Peck Tribes are continuing to work with the Bureau of Reclamation to modify and complete the Final Engineering Report, incorporating the costs of facilities to serve both the Reservation and the Dry Prairie Water System outside the Fort Peck Indian Reservation. Environmental baseline investigations have been concluded within the Reservation and the Dry Prairie areas of the project. The latter investigations are a foundation for the environmental assessment

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The Clinton Administration designated the Fort Peck Indian Reservation as an Enterprise Community, underscoring the level of poverty and need for economic development in the region. The success of the Enterprise Community designation within the Reservation will be questionable without the availability of safe and adequate municipal, rural and industrial water supplies that this regional project will bring to the Reservation. Outside the Fort Peck Indian Reservation, the Dry Prairie area has income levels that are higher than within the Reservation but significantly lower than the State average.

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TABLE 1.—COMPARISON OF FORT PECK TOTAL DISSOLVED SOLID LEVELS WITH COMPARABLE PROJECTS

Project	Community	Total Dissolved Solids (mgl)
Fort Peck	Fort Kipp	2,730
Lewis and Clark	Upper Limit	2,600
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Mni Wiconi	Reliance	2,056
Mni Wiconi	Murdo	1,761
Mni Wiconi	Kennebec	1,740
Mni Wiconi	Presho	1,398
Fort Peck	Poplar	1,380
Fort Peck	Frazer	1,180
Lewis and Clark	Lower Limit	1,179

TABLE 1.—COMPARISON OF FORT PECK TOTAL DISSOLVED SOLID LEVELS WITH COMPARABLE PROJECTS—Continued

Project	Community	Total Dissolved Solids (mgl)
Mni Wiconi	Wakpamni Lake	1,125
Mni Wiconi	Horse Creek	869
Fort Peck	Brockton	748
Mni Wiconi	Pine Ridge Village	416

TABLE 2.—COMPARISON OF FORT PECK SULFATE LEVELS WITH COMPARABLE PROJECTS

Project	Community	Sulfate (mgl)
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Fort Peck	Poplar	103
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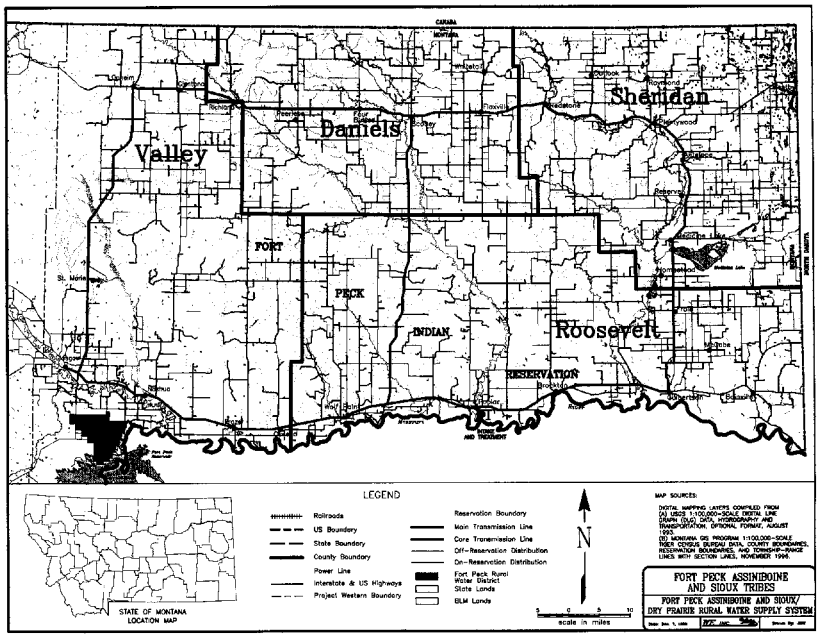

FIGURE 1.—Project Map

FISCAL YEAR APPROPRIATIONS REQUEST

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Item	*Budget*
Design and Construction Activities:	
Intake Design	$232,580
Intake Investigation and Value Engin	42,960
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WTP Design	1,226,205
Intake Construction (50 percent)	1,440,000
Total	3,025,565

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PROPOSED ACTIVITIES

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The budget request provides for final design of the intake and treatment plant for this regional drinking water project. Alternative analyses will be conducted to ensure that the most cost-effective options are adopted.

The budget request provides for 50 percent of the construction costs of the intake on the Missouri River which will deliver raw water to the treatment plant. The budget request is consistent with the construction schedule furnished last year to the Congressional Budget Office as part of its investigation of the Senate bill authorizing the project (S. 624). (See Table 3 for the construction schedule).

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The feature of this project that makes it more cost effective than similar projects is its proximity to the Missouri River. The southern boundary of the Fort Peck Indian Reservation is formed by the Missouri River for a distance of more than 60 miles. Many of the towns in this regional project are located two to three miles from the river, including Nashua, Frazer, Oswego, Wolf Point, Poplar, Brockton, Culbertson, and Bainville. As shown on the enclosed project map, a looping transmission system outside the Fort Peck Indian Reservation will deliver water 30 to 40 miles north of the Missouri River. Therefore, the distances from the Missouri River to all points in the main transmission system are shorter than in other projects of this nature in the Northern Great Plains.

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Mni Wiconi	Pine Ridge Village	416

TABLE 2.—COMPARISON OF FORT PECK SULFATE LEVELS WITH COMPARABLE PROJECTS

Project	Community	Sulfate (mgl)
Lewis and Clark	Upper Limit	1,500
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Fort Peck	Fort Kipp	1,120
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Fort Peck	Brockton	212
Fort Peck	Poplar	103
Mni Wiconi	Pine Ridge Village	70

APPROPRIATIONS REQUEST

The Fort Peck Assiniboine and Sioux Tribes respectfully request funds to continue planning and begin construction of the Fort Peck Reservation RWS, Montana, in the amount of $3,461,000 as set out below:

Fiscal Year 2001 Appropriation Request Fort Peck Assiniboine and Sioux MRI System Dry Prairie RWS

Item	*Budget*
Planning and Design Activities:	
Tribal Administration	$115,160
Tribal Technology	7,100
Dry Prairie Administration	61,020
Environmental Assessment	136,440
Conceptual Value Engineering/FER	115,590
Intake Investigation and Value Engin	42,960
WTP Investigation and Value Engineer	83,820
Intake Design	232,580

Fiscal Year 2001 Appropriation Request Fort Peck Assiniboine and Sioux MRI System Dry Prairie RWS—Continued

Item	*Budget*
WTP Design	1,226,205
Subtotal	2,020,875
Construction Activities: Intake Construction (50 percent)	1,440,000
Total	3,460,875

The Tribes are appreciative of the work by this Subcommittee on the project previously. In fiscal year 1993 and fiscal year 1994, $350,000 were appropriated, and in fiscal year 1997 through fiscal year 1999, $810,000 were appropriated for planning purposes.

PROPOSED ACTIVITIES

This project, which includes all of the Fort Peck Indian Reservation in Montana and the Dry Prairie portion of the project outside the Reservation (see map), was authorized by the full Senate in the closing days of the last session. Authorization by the full House is anticipated in this session.

Planning and Design Activities—$2,020,875

The budget request provides $562,090 for planning activities. It provides for continued work to amend and complete the Final Engineering Report to address both federal and state requirements for the report. Value engineering will be performed on the Final Engineering Report in an effort to lower costs of the project without diminishing function. The budget request provides for completion of the NEPA requirements through the preparation of an environmental assessment. No significant environmental impacts are expected, and an environmental impact statement is not contemplated. This judgment is based upon prior work with state and federal agencies in advance of the preparation of the environmental assessment.

The budget request provides $1,458,785 for final design: for final design of the intake and treatment plant for this regional drinking water project. Alternative analyses will be conducted to ensure that the most cost-effective options are adopted.

Construction Activities—$1,440,000

Finally, the budget request provides $1,440,000 for 50 percent of the construction costs of the intake on the Missouri River which will deliver raw water to the treatment plant. The budget request is consistent with the construction schedule furnished last year to the Congressional Budget Office as part of its investigation of the Senate bill authorizing the project (S. 624). (See Table 3 for the construction schedule).

The budget includes $272,000 for Reclamation oversight in the planning, design and construction activities.

STATUS OF PROJECT PLANNING

The work products completed to date by the Bureau of Reclamation include a Needs Assessment and Feasibility Report within the boundaries of the Fort Peck Indian Reservation. The Fort Peck Tribes are continuing to work with the Bureau of Reclamation to modify and complete the Final Engineering Report, incorporating the costs of facilities to serve both the Reservation and the Dry Prairie Water System outside the Fort Peck Indian Reservation. Environmental baseline investigations have been concluded within the Reservation and the Dry Prairie areas of the project. The latter investigations are a foundation for the environmental assessment

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The Clinton Administration designated the Fort Peck Indian Reservation as an Enterprise Community, underscoring the level of poverty and need for economic development in the region. The success of the Enterprise Community designation within the Reservation will be questionable without the availability of safe and adequate municipal, rural and industrial water supplies that this regional project will bring to the Reservation. Outside the Fort Peck Indian Reservation, the Dry Prairie area has income levels that are higher than within the Reservation but significantly lower than the State average.

The geologic setting of the Fort Peck Indian Reservation and the counties outside the Reservation is comparable to the rest of eastern Montana, North Dakota and South Dakota. With the exception of the Missouri River, which is a high quality water source, the groundwater supplies of the region are of poor quality with more than 80 percent of rural households, that rely on near surface aquifers, exceeding nitrate contaminant levels for drinking water. Some of the worst water on the North American Continent lies below the Fort Peck Indian Reservation in the Madison Formation. This water is not used for human or livestock consumption. It is a brine several times more concentrated than sea water. Above this unsuitable aquifer are lesser aquifers that have been subjected to oil and gas development and have been contaminated, in part, by those activities.

The Poplar River, which flows through the central portions of the Fort Peck Indian Reservation and the region is the subject of an Apportionment Agreement between Canada and the United States. Half of the water supply is available for Canada as measured at the International Boundary, and the balance is available for use in the United States. Depletion of this resource by agricultural and coal-fired power generation on the Canadian side increases the concentrations of chemicals and contaminants in the supply for the United States. The Poplar River and its principle tributaries are neither dependable supplies of water nor are they of suitable quality for this project. Thus, the Fort Peck Tribes and Dry Prairie are seeking a regional water project, comparable to Garrison, WEB, Mni Wiconi and Mid-Dakota that rely on the high quality waters of the Mainstem Missouri River.

The feature of this project that makes it more cost effective than similar projects is its proximity to the Missouri River. The southern boundary of the Fort Peck Indian Reservation is formed by the Missouri River for a distance of more than 60 miles. Many of the towns in this regional project are located two to three miles from the river, including Nashua, Frazer, Oswego, Wolf Point, Poplar, Brockton, Culbertson, and Bainville. As shown on the enclosed project map, a looping transmission system outside the Fort Peck Indian Reservation will deliver water 30 to 40 miles north of the Missouri River. Therefore, the distances from the Missouri River to all points in the main transmission system are shorter than in other projects of this nature in the Northern Great Plains.

For comparison of water quality of this project with other regional projects, please refer to Tables 1 and 2.

TABLE 1.—COMPARISON OF FORT PECK TOTAL DISSOLVED SOLID LEVELS WITH COMPARABLE PROJECTS

Project	Community	Total Dissolved Solids (mgl)
Fort Peck	Fort Kipp	2,730
Lewis and Clark	Upper Limit	2,600
Mni Wiconi	Red Shirt	2,332
Mni Wiconi	Reliance	2,056
Mni Wiconi	Murdo	1,761
Mni Wiconi	Kennebec	1,740
Mni Wiconi	Presho	1,398
Fort Peck	Poplar	1,380
Fort Peck	Frazer	1,180
Lewis and Clark	Lower Limit	1,179
Mni Wiconi	Wakpamni Lake	1,125
Mni Wiconi	Horse Creek	869
Fort Peck	Brockton	748

TABLE 1.—COMPARISON OF FORT PECK TOTAL DISSOLVED SOLID LEVELS WITH COMPARABLE PROJECTS—Continued

Project	Community	Total Dissolved Solids (mgl)
Mni Wiconi	Pine Ridge Village	416

TABLE 2.—COMPARISON OF FORT PECK SULFATE LEVELS WITH COMPARABLE PROJECTS

Project	Community	Sulfate (mgl)
Lewis and Clark	Upper Limit	1,500
Mni Wiconi	Reliance	1,139
Fort Peck	Fort Kipp	1,120
Mni Wiconi	Red Shirt	1,080
Mni Wiconi	Murdo	1,042
Mni Wiconi	Kennebec	984
Mni Wiconi	Presho	644
Lewis and Clark	Lower Limit	538
Fort Peck	Frazer	498
Mni Wiconi	Horse Creek	410
Mni Wiconi	Wakpamni Lake	398
Fort Peck	Brockton	212
Fort Peck	Poplar	103
Mni Wiconi	Pine Ridge Village	70

PREPARED STATEMENT OF THE CITY OF MARSHALL, MINNESOTA

Chairman Domenici and Members of the Appropriations Subcommittee, I appreciate the opportunity to submit this testimony on behalf of the City Council and the citizens of Marshall, Minnesota. We are requesting $1.312 million in Federal funds for the construction of the final Stage of the flood control project authorized in the Water Resources Development Act of 1986. This is the funding level that the U.S. Army Corps of Engineers has determined is necessary to complete the work on the Marshall, Minnesota Flood Control Project in fiscal year 2001. The Assistant Secretary of the Army (Civil Works) has ask Congress to provide the $1.312 million for the Marshall project in his Budget Request for the U.S. Army Corps of Engineers for fiscal year 2001.

The Conference Committee designated $2.275 million for the Marshall project in the fiscal year 2000 Appropriations Bill. The City of Marshall has allocated cash funds of $1 million to the project, financed the dredging and reconstruction work required on the diversion channel at a cost of $350,000, and purchased property and easements at a cost of about $1 million. The Minnesota State Legislature has appropriated funds totaling $1.5 million toward the completion of the flood control project at Marshall.

This funding enabled 80 percent of the project construction to be completed. The physical structures are in place, levees have been constructed, the river bank protection and erosion control work is done, and the channel work completed. All the necessary property and easements have been purchased by the City. The diversion channels were dredged at the City's costs to assure free flowing during overflow conditions. The diversion channels have been enlarged and the gates either repaired or replaced. The Ditch 62 project has been completed which provides for the storm water collection system for about 60 percent of the City. Bids for the remainder of the project have been advertised and were awarded in April, 1999.

WORK TO BE COMPLETED IN FISCAL YEAR 2000 AND FISCAL YEAR 2001

The remaining work to be completed with fiscal year 2001 funding is extremely important to the citizens of Marshall and to the agriculture enterprises in both the Cottonwood and the Redwood River Basin Watershed Districts. This construction work deals with the structures, including three large box culverts and a overflow

wier, that simulates the natural current flows over Highway 23 during flood conditions.

The current project is designed to maintain current intra-basin flood flow conditions to assure that there will be no adverse impacts downstream in either the Redwood or Cottonwood Basins as a result of the flood control project. A flow distribution study was conducted in 1987 to analyze the intra-basin flows. This study was followed by UNET modeling in 1997, which supported the position that there would be no significant downstream impacts from the flood control project when the project is completed.

Other work remaining to be completed includes landscaping, some interior drainage, and multi-use trails and recreational paths along the diversion channels.

FLOW AGREEMENT SIGNED

A major issue was resolved in the Marshall Flood Control Project regarding the flow rate of the Redwood River during major flood conditions. A portion of the Redwood River basin waters are diverted into the Cottonwood River basin. The project requires that historic overflows are maintained between the two watershed districts. After numerous public meetings, a flow distribution agreement was executed on February 22, 1998, by the City of Marshall, Lyon County, the State of Minnesota, and the Corps of Engineers.

PROJECT LOCATION AND DESCRIPTION

The project is located in Lyon County in the Southwest corner of the State of Minnesota, about 145 miles southwest of St. Paul. It is near the center of the Redwood River basin. Southwest State University, the business district, and most of the homes of the nearly 13,000 citizens are located in the floodplain of the Redwood River. Marshall serves as the county seat of Lyon County, and is the commercial and agricultural center for the region.

The Redwood River, a tributary of the Mississippi, enters the southwest corner of the City, winds its way through the City, exiting at the northeast boundary near the University campus. The Redwood River basin serves an elongated drainage area of approximately 743 miles.

The river's elevation drops at the significant rate of 19 feet per mile until it reaches the City. There the river slope flattens out to an average of about 4 feet per mile. The lack of a confining valley, and the reduction in grade on the plain, contributes significantly to overland flooding in the Marshall area. The geological decline in the elevation in the 50 miles from the watershed area to the City of Marshall is greater than the Mississippi River elevation decline from Minneapolis to New Orleans (See Attachment.)

A federally constructed flood control project was completed in 1963. While it is successful in protecting much of the City during frequent, smaller floods, the upstream and downstream channels were not effective during major flood events. At those times, the Redwood River overflows a county highway, bypasses the diversion control structure, and floods the inter city area.

The project is designed to protect the City of Marshall from major flood events. Briefly, the authorized plan calls for channel improvements, drainage facilities, the construction of 4.7 miles of additional levees, 3.8 miles of bank protection, 0.3 miles of new high-flow diversion channel, an inter basin overflow structure, modifications to the existing diversion channel and drop structures, and limited recreation trails, picnic and rest area facilities.

PROJECT AUTHORITY, FUNDING, AND STATUS

The Marshall Flood Control Project was authorized in the Water Resources Development Act of 1986, and reauthorized in the Water Resources Act of 1988. Funds were allocated in fiscal year 1984 to initiate preconstruction engineering and design work. The total project is estimated to cost $10.9 million of which Federal costs are estimated to be $8.01 million, and non-Federal costs of $2.89 million.

The non-Federal costs have been provided through the State flood mitigation grant program, and by bonding by the City of Marshall. The Design Memorandum and Environmental Assessment were completed and approved in 1987.

Summarized Federal Financial Data

Estimated Federal Cost $8,010,000

Summarized Federal Financial Data—Continued

Estimated non-Federal Cost	2,890,000
Total Project Cost	10,900,000
Federal Allocations to Date	6,698,000
Balance of Federal funds to Complete Project	1,312,000
Benefit-cost Ratio (8 percent)	1.10

PROJECT BACKGROUND

Water and land related problems in the Minnesota River basin were first investigated by the St. Paul District Engineer in 1934, but his study did not address the flooding and related problems in Marshall. In 1960, after the severe floods of 1957, improvements were recommended by the Corps which included the construction of levees and a floodwater diversion channel.

This flood control project was completed in 1963, by the U.S. Army Corps of Engineers to, "provide protection for the people and property of Marshall from the frequent flood risks." The major feature of the project was a 2.4 mile diversion channel around the west and north sides of the City, a 1,840 foot levee at the upstream end of the project, and other features. The channel was designed to handle a 6,500 CFS flow. The overflow, then, would move naturally into the Cottonwood River Watershed south of Marshall.

In 1969, a flood of 8,090 CFS was experienced in Marshall. The river channel both upstream and downstream from Marshall was inadequate to convey the 1963 design flows either to or from the diversion channel. At flows greater than 3,500 CFS, floodwaters bypass the diversion channel and flood the inner City of Marshall.

As a result of the failure of the 1963 flood control project to protect the City, other studies were conducted by a private engineering firm under the direction of the Corps in 1974. The Corps completed a flood control report in 1976, and a feasibility study in 1979. This report was updated by a reevaluation of the problems in 1984. The current project was then authorized in the 1986 Water Resources Development Act. It is important to note that the project as constructed in 1963, has worsened the potential of flooding for the City. The rate of flow is not adequate to move the flood waters through the diversion channel, and other problems.

The three "Holiday Floods of 1993" (Mother's Day, Father's Day and Independence Day) occurred at both ends of the diversion channel, causing hundreds of thousands of dollars in damages to homes, businesses, and the City's infrastructure. As the water levels remained at flood stage throughout the summer, it created an atmosphere of fear and unrest among the citizens of Marshall.

In 1995, the Redwood River was again flowing at capacity, and the City of Marshall narrowly avoided a disaster worse than the floods of either 1969 or 1993. From 9 to 15 inches of rain fell near Montevideo, Minnesota, less than 40 miles from the Redwood Watershed District.

If the storm had moved only a few miles to the southwest, the flood waters would have engulfed the City at a rate of 8,000 to 12,000 cubic feet of water per second. This is a much greater water overflow than that which occurred in the disastrous flooding of 1969, and as much as three times greater than the 1993 floods.

The District Office of the Corps of Engineers provided estimates stating that the City would have incurred millions in property damage, and that flash flooding of this nature could well have resulted in the loss of lives. Corps officials stated that flash flooding of this magnitude would have made most emergency measures futile. As a result of the flat terrain in and around the City, and much of the Marshall community would have been under water.

CORPS SCHEDULE FOR MARSHALL FLOOD CONTROL PROJECT

Activity	Beginning date	Completion date
Plans & Specs Initiated	2/28/96	Complete.
Plans and Specs Submitted	2/28/98	Complete.
Plans & Specs Approved	3/31/98	Complete.
Real Estate Acquisition	12/31/98	Complete.
Certification of Real Estate	1/15/99	Complete.
Construction Contract Advertised	2/24/99	Complete.

CORPS SCHEDULE FOR MARSHALL FLOOD CONTROL PROJECT—Continued

Activity	Beginning date	Completion date
Construction Contract Awarded	3/24/99	3/24/99.
Construction Contract Completion	3/24/99	4/6/99.
Construction Stage 2 Completion	4/25/99	11/30/01.

COUNTY DITCH NO. 62 DRAINAGE SYSTEM

In addition to the Marshall Flood Control Project, the overall protection of the City required the reconstruction and modification of the storm sewer drainage system. The examination of the drainage problems was acknowledged in the General Design Memorandum developed by the Corps for Marshall, but is not included, nor is it a part of the funding of this project.

County Ditch No. 62 serves as the storm sewer drainage system for about 60 percent of the City's corporate limits. The Ditch extends along the northeast part of the City, in close proximity to the levee construction required for the Corps flood control project, and feeds into the Redwood River. With the growth of the community, and the development of property and the University campus, since the construction of the Ditch in 1958–1959, the flooding problems in the City have been exacerbated by the lack of drainage and poor water movement in a system that is no longer adequate for the community. Construction was completed in 1998.

The City of Marshall, in cooperation with Lyon County and the State of Minnesota, a comprehensive storm water system was planned, designed, and jointly funded by FEMA, the State of Minnesota, Lyon County and the City governments at a total cost of slightly more than $3 million. There are elements of the Storm Sewer/Ditch Project that are closely associated with the Flood Control Project.

FINAL CONSTRUCTION AND FUNDING NEEDS

The Corps of Engineers has awarded a bid for construction work that includes fiscal year 1999, fiscal year 2000, and fiscal year 2001. Funds appropriated by this Committee in fiscal year 1999 and fiscal year 2000, and non-Federal funds have allowed the Corps to move ahead aggressively with plans to complete the project in December, 2000. An appropriation of the $1.312 requested by both the Army Corps of Engineers and City is necessary for this schedule to be maintained.

It has been noted by City officials that as soon as construction work begins, some citizens are lulled into a sense of false security. A number of homeowners have called the City asking to drop their costly flood insurance, assuming their homes are protected by the unfinished flood control project. Delays in the completion of the project results in a lack of preparation and a state of readiness by some citizens. These are the precautions and preparations that have prevented major disasters during past flood events.

For these reasons, we respectfully request this Subcommittee to appropriate $1.312 million of Federal funds in the fiscal year 2001 Appropriations Act to complete the work on the Marshall Flood Control Project. The Committee's favorable response to this request will prevent any delays affecting the completion of the project, and avoid any cost overruns over that inevitably occur when construction is delayed as a project is nearing completion.

Thank you for the opportunity to bring this important matter to your attention through this statement. I will be delighted to respond to any questions you may have about the project.

SOUTHEASTERN U.S. WATER RESOURCE DEVELOPMENT PROJECTS

PREPARED STATEMENT OF THE COOSA-ALABAMA RIVER IMPROVEMENT ASSOCIATION, INC.

Mr. Chairman & distinguished Committee members: This statement includes the following:

—A plea to recognize and maintain our Nation's inland waterways system as a vital part of the national transportation infrastructure;

—A request for support in the following areas:

—O&M funding for federal projects in the Coosa-Alabama Basin and Mobile Harbor;

—Funding for update of economic benefits for the Coosa River Navigation Project;
—Funding to rehabilitate Mayo's Bar Lock and Dam on Coosa River;
—Funding to maintain recreational facilities and hydropower operations at Allatoona Lake;
—Supporting the Alabama Sturgeon Candidate Conservation Agreement developed by a coalition of government and industry in Alabama.

EXPANDED STATEMENT

Thank you for the opportunity to present my perspective on several topics relating to our Nation's waterways system in general, and to the Coosa-Alabama River Basin in particular. As President of the Coosa-Alabama River Improvement Association, I speak for a large and diverse group of private citizens and political and industrial organizations that sees the continued development of the Coosa-Alabama Waterway as an opportunity for economic growth in our region as well as the Nation.

Our membership reflects a broad range of callings and professions, including shippers and tow operators, businessmen, bankers and private individuals who have a stake in future economic development for their firms and successors to enjoy. Then there is a larger group of elected officials and their constituents typical of the twenty-three municipalities and nineteen counties along the waterway who are members of this association. Spurred by a desire to promote economic growth through enhanced waterway transportation, these members work diligently to develop our waterways into a productive part of the river infrastructure of the State and Nation.

We are concerned about the deteriorating waterway infrastructure throughout the nation. Our inland waterways are vital to this Nation's welfare. America's ports, navigable waterways, flood protection, water supply, environmental restoration, hydroelectric, and other water resource programs enhance economic development, national security, and general well being. These programs serve the national interest in countless ways, returning far more in public benefits than they cost. A top-notch navigation system, able to meet the demands of both domestic and international commerce, is a driving force behind the national economy, transporting annually almost 15 percent of the nation's commodities, one out of every eight tons. The waterways are vital to our export and import capability, linking our producers with consumers around the world. It is incumbent upon the Federal Government to maintain and improve this valuable national asset. Therefore, we ask Congress to appropriate enough funds for required maintenance and construction to keep the waterways the economic multiplier it is. The Civil Works budget in fiscal year 2001 must be approximately $5 billion to maintain the system and allow for modest growth. The Federal government must commit to improve the waterways infrastructure or risk serious economic consequences and jeopardizing large public benefits.

Some think tanks advocate turning the Corps of Engineers' Civil Works Program over to state or private managers. We disagree with that idea. Having one agency responsible for maintaining water projects on the Alabama River, for example, provides benefits that can't be measured in dollars and cents. Security, responsiveness and historical knowledge are incalculable to users of the river. The Corps' experience is a public investment. The O&M funding appropriated annually is a public investment. Slashing that investment does not automatically translate into private prosperity.

We are concerned that any budget strategy that reduces funding for the operations and maintenance of inland and intracoastal waterways will have a detrimental effect on the economic growth and development of the river system. We cannot allow that to happen. In the Alabama-Coosa River Basin, we must be able to maintain the existing river projects and facilities that support the commercial navigation, hydropower and recreational activities so critical to our region's economy. The first priority then must be the O&M funding appropriated to the Corps of Engineers to maintain those projects. Budget requests for the individual projects follow:

Project	President's budget	Association's budget request
Alabama-Coosa River, AL [1] (AL River incl Claiborne L&D)	$5,355,000	$5,355,000
Miller's Ferry L&D	4,999,000	4,499,000
Robert F. Henry L&D	4,962,000	4,962,000
Lake Allatoona, GA	4,520,000	6,000,000
Carters Lake, GA	7,489,000	7,489,000
Lower Alabama River Study (South of Claiborne) feasibility study	200,000	200,000

Project	President's budget	Association's budget request
Coosa River Navigation Project	.....	150,000
Mayo's Bar	.....	500,000
Totals	27,525,000	29,155,000

[1] Includes dredging from the mouth of the Alabama River through Claiborne L&D to Miller's Ferry. Coosa River not included.

We also support funding O&M for Mobile Harbor at $18,665,000. We cannot allow Mobile Harbor infrastructure to deteriorate because not enough funds were appropriated.

To attract new business into the Alabama River Basin, we must improve the infrastructure of the river itself, specifically the navigational reliability below Claiborne Dam. Increased reliability is the only way prospective investors will entertain establishing an industry that uses river transportation. The Corps of Engineers currently maintains 65–70 percent reliability through training dikes, reservoir management, and dredging. Of these measures, dredging is the most effective, but we can do more.

The most affordable and most environmentally friendly solution to increasing navigation reliability on the Lower Alabama River is to improve the training dikes. Mobile District is in the middle of a feasibility study to determine the interest of the Federal Government in such a project. Without an improvement in the navigation reliability on the Lower Alabama River, we cannot hope to attract new river-related industry into the Basin. We ask Congress to appropriate $200,000, as requested in the President's Budget, to continue the feasibility study already underway.

A major objective of our association is to complete a navigable waterway from Mobile to Rome, Georgia, which reflects our emphasis on infrastructure investment and the creation of jobs and economic opportunity throughout our region. The Pre-design Engineering Surveys of the Coosa River Navigation Project are complete, so one of the most time-consuming requirements of the project is done. We are well aware of the restrictive funding for such an undertaking in the current environment, but ask the Committee to recognize that a Coosa-Alabama waterway would be one of the largest and most rapid generators of jobs currently available. We owe it to the people of the Coosa-Alabama River Basin, the states of Alabama and Georgia, and the entire region to maintain the vision of completing this waterway, particularly because of its recreational potential. We need, however, to update some of the economic database supporting the proposal. We ask that $150,000 be appropriated to allow the Mobile District of the U.S. Army Corps of Engineers to update the economic evaluation of the Coosa River Navigation Project.

Recreation has become a major economic factor on our waterways. Boating, fishing, swimming, and camping have become an indispensable economic tool for many of our lake and river communities. Two projects, one private and one federal, in the Upper Coosa River Basin need federal funding to enhance the ability of communities in those areas to take advantage of the recreational benefit: Mayo's Bar near Rome and Lake Allatoona.

Mayo's Bar Lock and Dam, eight miles downstream of Rome, Georgia, on the Coosa River, is an old federal project constructed in 1913 as part of an overall plan to provide navigation from Wetumpka, Alabama, to Rome. The project was abandoned in 1931. The site of the facility is currently operated as a recreational facility. The lock, however, is unusable as no maintenance has been performed on it since the 1930's. Floyd County, Georgia officials plan to restore and operate the lock to facilitate recreational boat traffic from Rome to Cedar Bluff and Centre, Alabama through Lake Weiss, 57 miles downstream. A 1988 study by the Corps of Engineers found the cost of rehabilitating the lock to be feasible. Cost of the project today is estimated at $3 million. Section 528 of the Water Resources Development Act of 1999 authorized the Corps of Engineers to "provide technical assistance (including planning, engineering, and design assistance)" for reconstruction of Mayo's Bar Lock and Dam. Floyd County is prepared to share the costs of the rehabilitation on a 50/50 basis. Of the $1.5 million estimated total Federal cost of the project, $500,000 is needed in fiscal year 2001 for engineering and design. We strongly urge the Committee provide funding to get this valuable economic asset underway to the benefit of the northwest Georgia and northeast Alabama.

At Lake Allatoona, funding for the Corps of Engineers to maintain recreational facilities has been cut well below the level needed to keep the project fully func-

tional. The President's Budget for 2001 proposes $837,000 for Lake Allatoona recreation, a reduction of $2.276 million from the fiscal year 2000 allocation. That money needs to be reinstated. Otherwise, Mobile District will have to close some camping facilities, shorten the time other facilities are open by two months, delay necessary maintenance tasks, and perhaps even reduce payroll, resulting in an economic loss of over $27 million in 2001. Lake Allatoona is the second most-visited lake in the United States. We would be remiss to allow that kind of economic downturn because not enough money has been appropriated to ensure facilities are maintained. We ask that Corps funding for Allatoona Lake recreation be increased from $837,000 in the President's Budget to $2.22 million, resulting in a total project allocation of $6,000,000.

In addition to helping resolve the funding shortfall for recreation, reinstating Allatoona funding to its historic levels of $6 million in fiscal year 2001 will enable the Mobile District to begin the process to replace an outdated, over-30-years old microwave system at the generating plant. The microwave system allows the Corps to control the Allatoona plant remotely from Carters Lake. The Corps can no longer procure spare parts for the system and is operating on a breakdown maintenance concept only, which means that the only time maintenance can be performed is when the generator is down. That translates into higher costs for consumers as Southeastern Power Administration must then purchase power at a higher cost from other sources.

The last issue I wish to address is a plea based on our experiences over the past several years with attempts by the Fish and Wildlife Service to list the Alabama Sturgeon as endangered under the Endangered Species Act of 1973. In December of 1994, the Secretary of Interior, Mr. Bruce Babbitt, decided not to list the Alabama Sturgeon, citing a lack of scientific evidence that the fish was a separate and distinct species or even currently existed in the habitat scrutinized. Now, the Fish and Wildlife Service sees fit to again propose listing the fish, despite a clear alternative to saving the fish that has been underway for several years now, an alternative outside the confining restrictions of the Endangered Species Act.

A coalition of government and industry has developed a Candidate Conservation Agreement (CCA), a legal agreement allowed under the Endangered Species Act, that has strong potential to propagate the Sturgeon population in the Mobile River Basin. The State of Alabama, charged with the execution of a previously developed voluntary Sturgeon Conservation Plan, currently has two sturgeons in a hatchery in Marion, Alabama. Congress has appropriated over one million dollars to this effort so far. The CCA is the only plan conceived that has even a remote chance of successfully propagating young sturgeon. Listing the fish as an endangered species under the ESA means the sturgeon would have to compete with other listed species for money to complete a recovery plan, jeopardizing funding already available as well as the work done on the Conservation Plan to this point. We strongly support the Candidate Conservation Agreement as an example of the compromise required in the environment-economic debate. We ask the Congress to fully fund and support the Candidate Conservation Agreement as the best way to save sturgeon in the Mobile River Basin.

In summary, we request your support in the following areas:

—Sufficient O&M funding of the U.S. Army Corps of Engineers Civil Works budget to maintain and enhance the U.S. inland waterways system, including the Coosa-Alabama River Basins and Mobile Harbor;

—Funding for investigating the feasibility of improving the reliability of the navigation channel below Claiborne Dam on the Lower Alabama River;

—Funding an updated economic analysis of the Coosa Navigation Project;

—Funding federal share for planning and design of the rehabilitating Mayo's Bar Lock and Dam on the Coosa River near Rome, Georgia;

—Increasing the appropriation to support recreational upkeep and hydropower maintenance on Lake Allatoona;

—Supporting the Candidate Conservation Agreement for the Alabama sturgeon as developed through the cooperative efforts of government and industry in Alabama.

Thank you for allowing us to submit this testimony and for your strong support of the Nation's waterways.

LETTER FROM PHILLIP A. SANGUINEETI

THE ANNISTON STAR,
Anniston, AL, March 8, 2000.

Hon. PETE V. DOMENICI,
Senate Subcommittee on Appropriations for Energy and Water Development, U.S. Senate Washington, D.C.

Dear PETE: I am writing to seek your support of the Coosa-Alabama River Improvement Association's request for an appropriation from the State General Fund in fiscal year 2001.

As a member of the Board of Directors for the Association, I strongly endorse its mission of promoting the development of the Coosa and Alabama Rivers for the benefit of the state. CARIA is the only organization in our State that annually works for funding of federal projects on those rivers.

In the water allocation negotiations between Alabama and Georgia, CARIA has been the primary advisor to Alabama's negotiators on navigation issues in the Alabama-Coosa-Tallapoosa basin.

I support the Association's request for $150,000 to continue authorization for planning, engineering and design for the Coosa River Navigation Project. I also support the Association's request for an add-on of $500,000 for Corps of Engineers planning and design at Mayo's Bar near Rome, Ga.

I also support the efforts of Alabama and Georgia to agree on a water allocation formula between the two states, but I do not support a formula that negatively affects the ability of Mobile District Corps of Engineers to maintain a nine-foot navigation on the Alabama River, or that seriously impedes the State of Alabama in developing its economic potential.

Very truly yours,

PHILLIPS A. SANGUINEETI,
President.

PREPARED STATEMENT OF THE MONROE COUNTY COMMISSION

The Monroe County Commission, Monroe County, Alabama, respectfully request your support of the U.S. Army Corps of Engineers' fiscal year 2001 budget for funding to operate and maintain Water Projects in the Alabama-Coosa River Basin. The amount that we are asking you to approve is $28.175 million, in addition to the President's Budget for fiscal year 2001 in the amount of $18.665 million for Mobile Bay.

Projects to be funded in this request include the improvement and extension of the Coosa-Alabama Waterway Systems. Navigational reliability below the Claiborne Lock & Dam is essential to accommodate Navigation to Mobile; this entails maintaining, improving and dredging of the River. Also included in this request is $150,000.00 to continue authorization for planning, engineering and design for the Coosa-Alabama Project, so, that eventually, commercial navigation will be possible from Rome, Georgia to the Port of Mobile. Also included in this request is $500,000.00 for the Corps of Engineers, planning and design at Mayo's Bar near Rome, Georgia.

The Monroe County Commission further supports the efforts of the State of Alabama and Georgia to agree on a water allocation formula between the two states that will not adversely affect industrial development along the Coosa-Alabama River Systems in Alabama nor negatively affect the operations of existing industry, commerce and development along this River System. We do not support a water allocation that will negatively affect the ability of Mobile District Corp of Engineers to maintain a nine foot navigational Channel on the Alabama River.

Your favorable consideration of the fiscal year 2001 budget request is essential to the Economic Development of the Southeastern part of the United States.

PREPARED STATEMENT OF THE CITY OF METUMPKA, AL

We support the Coosa-Alabama River Improvement Association's funding request for fiscal year 2001, especially the $150,000 to continue the authorization for planning, engineering, and design for the Coosa River Navigation Project (CRNP). An updated analysis can verify that the advantages established in 1945 remain viable some 55 years later.

Environmental friendly transportation and improved recreational facilities are important for today's society. The waters of the Coosa River, which flow through the middle of Wetumpka, provide an asset that can continue to enhance the entire area.

There are many benefits for the CRNP project. Locks around Bouldin, Mitchell, Lay, Logan, and Neely Henry dams would provide a major economic boost for the surrounding territory and southward to Mobile. A navigable channel from Gadsden to Wetumpka and Montgomery and on to Mobile would open vast waterway potentials.

We support and endorse all regional efforts to improve and extend the Coosa-Alabama Waterway and the priorities of the Coosa-Alabama River Improvement Association.

PREPARED STATEMENT OF THE CITY OF RAINBOW CITY, AL

I am writing to you as a member of the Board of Directors of Coosa-Alabama River Improvement Association. I have been active with this Association for many years and believe it is vital to this area to keep these projects alive. I am asking for your support on the following items:

—You support the Association's funding request for fiscal year 2001.

—You support the regional effort to improve and extend the Coosa-Alabama Waterway.

—Need to improve the navigational reliability below Claiborne Dam

—Need to maintain and improve training works and dredging

—Development of commercial river transportation between Mobile and Montgomery depends on these improvements

—You support the Association's request for $150,000 to continue authorization for planning, engineering, and design for the Coosa River Navigation Project (see encl)

—You support the Association's request for an add-on of $500,000 for Corps of Engineers planning and design at Mayo's Bar near Rome (see encl)

—You support the efforts of Alabama and Georgia to agree on a water allocation formula between the two states, but could not support a formula that negatively affects the ability of Mobile District Corps of Engineers to maintain a nine-foot navigation channel on the Alabama River or that seriously impedes the State of Alabama in developing its economic potential.

In addition, we support funding in the President's Budget of $18,665 million for Mobile Bay.

I strongly urge your consideration in this matter.

PREPARED STATEMENT OF THE CITY OF SELMA, AL

All of the various organizations in Selma and Dallas County involved in industry seeking, as well as the Mayor, City Council, County Probate Judge, and the County Commission wish to convey our support of the Coosa-Alabama River Association's funding request for fiscal year 2001. Our area is not served by an interstate highway; if fact we don't even have a four-lane highway to the south. We strongly recommend the need to improve and extend the Coosa-Alabama Waterway in order to develop and maintain commercial river transportation between Mobile and Montgomery.

We must maintain the navigational reliability below the Claiborne Dam and the dredging and training works are a vital part of this effort.

We also have discussed and support the request for an add-on of $500,00 for the planning and design at Mayo's Bar near Rome, GA and strongly urge the Association's request for $150,000 to continue authorization for the Coosa River Navigation Project which would link Montgomery and Gadsden. These additional monies would allow the planning, design, and engineering only for this project, which, on completion, would be a great incentive to new industry and help maintain competitive rates from both rail and truck companies. We must have federal funding now to maintain the authorization of the project.

With the improvements at the Port of Mobile, water transportation on this river system to the world wide export markets that have been and are being developed will have a tremendous affect on freight rates and eventually inflation.

We need this legislation and funding to help our area survive in this changing world economy.

Thank you for your help and consideration.

LETTER FROM JAMES T. JORDAN

J.T. JORDAN COTTON, INC.,
Centre, AL, March 8, 2000.

Hon. PETE V. DOMENICI,
Senate Subcommittee on Appropriations for Energy and Water Development, Washington, DC.

Dear SENATOR DOMENICI: This letter is to let you know that I wholeheartedly support the need to improve the navigational reliability below Claiborne Dam. I also support the need to maintain and improve training works and dredging. The development of commercial river transportation between Mobile and Montgomery depends on these improvements. I ask that you give serious consideration to putting funds for this in the fiscal year 2001 budget.

I would also like to see Congress support additional funding for two river projects in the Alabama-Coosa River Basin. We ask that congress appropriate $150,000 for continuing the authorization for the Coosa River Navigation Project. Another request is that an add-on of $500,000 for the Corps of Engineers planning and design of Mayp-s Bar near Rome. Mayo's Bar would be a strong tourist attraction to our area because we can attract many to this area because of the fishing and boating we have to offer.

One last point is that we need lowered freight rates. This provides a better export market and would help the trade business tremendously.

Please give serious thought and consideration to funding these projects.

Sincerely,

JAMES T. JORDAN,
Director.

PREPARED STATEMENT OF THE ALABAMA RIVER PULP COMPANY, INC.

Alabama River Pulp Company respectfully requests your support of the U.S. Army Corps of Engineers' fiscal year 2001 budget for funding to operate and maintain Water Projects in the Alabama-Coosa River Basin. The amount that we are asking you to approve is $28.175 million, in addition to the president' Budget for fiscal year 2001 in the amount of $18.665 million for Mobile Bay.

Projects to be funded in this request include the improvement and extension of the Coosa-Alabama Waterway Systems. Navigational reliability below the Claiborne Lock & Dam is essential to accommodate Navigation to Mobile; this entails maintaining, improving and dredging of the River. Also included in this request is $150,000.00 to continue authorization for planning, engineering and design for the Coosa-Alabama Projects, so, that eventually, commercial navigation will be possible from Rome, Georgia to the Port of Mobile. Also included in this request is $500,000.00 for the Corps of Engineers' planning and design at Mayo's Bar near Rome, Georgia.

Alabama River Pulp Company further supports the efforts of the State of Alabama and Georgia to agree on a water allocation formula between the two states that will not adversely affect industrial development along the Coosa-Alabama River Systems in Alabama nor negatively affect the operations of existing industry, commerce and development along this river system. We do not support a water allocation that will negatively affect the ability of Mobile District Corp of Engineers to maintain a nine foot navigational Channel on the Alabama River.

Your favorable consideration of the fiscal year 2001 budget request is essential to the Economic Development of the Southeastern part of the United States.

PREPARED STATEMENT OF THE CITY OF ROME, GEORGIA

The City of Rome has been a strong supporter of the Coosa-Alabama River development projects. We strongly support navigational use of the river basin as well as recreation and environmental purposes.

We strongly support the $500,000 request for the Corps of Engineer for planning and design at Mayo's Bar near Rome. For many years, we have worked to reactivate the lock and make the river system in Rome a part of Lake Weiss for recreational purposes. The historic and recreational value for this project is very much supported by our community. Significant local funds are being contributed to this project and the $500,000 is needed to make the project a reality.

Your attention to the request for our river basin is appreciated. If we can provide any additional information, please contact us.

PREPARED STATEMENT OF THE NATIONAL AUDUBON SOCIETY

On behalf of the 520 chapters and one million members and supporters of the National Audubon Society, I would like to take this opportunity to submit our views on the fiscal year 2001 budget of the U.S. Corps of Engineers. Our mission to protect birds, other wildlife, and their habitat, is the focal point of our statement on the Corps' fiscal year 2001 budget.

SOUTH FLORIDA ECOSYSTEM RESTORATION

Thank you for your past support for the restoration of the Florida Everglades. The Administration's fiscal year 2001 budget request includes $158 million for its Everglades restoration program. This request, which is almost $50 million above last year's appropriation, represents recognition of the needs of previously authorized programs whose performance assumptions have been included in Comprehensive Everglades Restoration Plan prepared by the Corps.

In particular, we urge the Subcommittee to fully fund the following programs:

—Central and Southern Florida Restoration projects—$90 million;

—Everglades and South Florida Ecosystem Restoration (WRDA 1996 "critical projects")—$20.5 million;

—Kissimmee River Restoration—$20 million; and,

—WRDA 1999 pilot projects—$4.5 million.

UPPER MISSISSIPPI RIVER ENVIRONMENTAL MANAGEMENT PROGRAM (EMP)

The Water Resources Development Act of 1999 increased the authorization for the EMP to $33 million a year, but fiscal year 2001 budget requested $18 million—the enacted level in fiscal year 2000. We believe that this request is inadequate and fully support increasing the EMP's budget. We understand that the Corps presently lacks the capability to warrant a $33 million appropriation for the EMP; however, we urge the Subcommittee to increase funding to a level that the Corps can effectively expend. Therefore, we urge the Subcommittee to provide $25 million for the EMP so that the Corps and its federal and state partners can continue to develop needed baseline data and implement habitat restoration projects to better manage the Upper Mississippi River.

ARMY CORPS OF ENGINEERS REGULATORY BUDGET

While the Administration's request for this year's regulatory budget calls for an $8 million increase (from $117 million to $125 million), we support a $12 million increase in funding for this chronically under-funded program area. This increase is necessary in order for the Corps to cover pay raises and fully implement the Congressionally-mandated jurisdictional appeals program while at the same time fulfilling their statutory duties under the Clean Water Act to protect waters of the United States.

Major advances in the quality of our nation's waters cannot be achieved without a strong Corps regulatory program. Funding levels over the past several years have made it increasingly difficult for the Corps to process applications for dredge and fill activities in a timely manner, compile data regarding impacts, monitor adherence to permit conditions, enforce against violators, and ensure adequate environmental review of permit applications. To this end, Audubon strongly supports a redirection of funding for environmentally and economically unjustified water resource projects to further supplement the regulatory budget. We also support modifications to the regulatory permit fee structure that would recapture a larger portion of the costs of processing permits.

CHALLENGE 21

We support full funding for the "Challenge 21" non-structural floodplain program. The Administration's request for fiscal year 2001 would provide $20 million to initiate this important initiative. We consider this amount inadequate to meet the demand for this program and encourage Congress to expand the authorization for this program in the future.

ATCHAFALAYA BASIN FLOODWAY SYSTEM PROJECT, MISSISSIPPI

We strongly support the Administration's request for $10 million for the Atchafalaya Basin Floodway System Project (part of the Mississippi River and Tributaries budget). Through the Atchafalaya project, easements and fee title acquisition are being utilized to protect and restore ecologically valuable land for low-cost natural floodwater storage. Audubon fully supports this project and would like to

see such floodplain restoration programs used as a model for flood control projects across the nation. In addition to providing for floodwater storage, the Atchafalaya Basin Floodway System Project will preserve, in perpetuity, some of the most valuable wetland habitat in the nation.

WHITE RIVER WATER PROJECTS, ARKANSAS

National Audubon Society strongly supports an appropriation of $500,000, included in the President's budget, that would allow the Army Corps of Engineers and the Fish and Wildlife Service to begin a comprehensive, basin-wide study of the environmental impacts of several major irrigation and navigation projects planned on the White River. A proposed $270 million irrigation project would pump water at an alarming rate. A $186 million lock and dam project would dramatically alter the water flow in the White River, and a $40 million dredging project would double the width and depth of the current navigation channel along a full 150 miles of the river. Clearly, these projects are major changes that will have a large cumulative effect on the ecological health of the White River. It is responsible and prudent to consider these cumulative impacts before proceeding with the projects.

However, it would be neither responsible not prudent to begin appropriating funds for these massive and potentially destructive projects before the study of environmental impacts has been completed. Unfortunately, the President's budget prematurely includes $21.9 million for the massive Grand Prairie Irrigation Project that would dramatically reduce river flow, lead to major wetland loss, and pollute the White River National Wildlife Refuge, a Wetland of International Importance. In a joint study, the National Wildlife Federation and Taxpayers for Common Sense highlighted the Grand Prairie Project as the single most environmentally-destructive and fiscally-irresponsible water project that has been proposed in the country. We strongly recommend striking the line-item for "East Arkansas Irrigation" so that tax dollars will not be wasted and prudent review of environmental impacts may be completed.

DE-FUNDING PRIORITIES

We believe some projects recommended for funding in fiscal year 2001 would have harmful and lasting environmental impacts. Audubon supports de-funding of these environmentally-damaging and economically unsupportable projects such as the Savannah Harbor Dredging, Sunflower Dredging/Yazoo Pump, St. Johns/New Madrid Floodway Project, Devils Lake Outlet, and the White River Navigation and Irrigation project (mentioned above). Funds for these projects should be re-directed to environmentally-sound local development projects, environmentally beneficial floodway projects and the Corps regulatory budget.

UPPER MISSISSIPPI RIVER NAVIGATION STUDY (NAV STUDY)

The Subcommittee should serious review the allegations recently made public in an affidavit filed by a whistleblower regarding faulty economic projections used to justify the expansion of the Upper Mississippi River Navigation Study. These allegations have severely undermined the public's confidence that the Corps' can make an honest set of recommendations on the Upper Mississippi River that benefits all taxpayers.

Given the numerous investigations presently underway, Congress must very carefully consider funding for this line item. We recognize the need to provide some level of funding for the Upper Mississippi River Navigation Study in order to preserve staffing levels while the allegations are investigated. However, we strongly oppose funding to continue work on the specific proposals for 1,200 foot lock and dam extensions on the Upper Mississippi River and Illinois River until all of the independent reviews on such proposals are completed.

SAVANNAH HARBOR EXPANSION, GEORGIA

Authorized in the Water Resources Development Act of 1999, the $230 million harbor expansion project on the Lower Savannah River along the border between Georgia and South Carolina poses a serious threat to the ecological health of the Savannah National Wildlife Refuge. Dredging will destroy many of the freshwater tidal wetlands in the wildlife refuge to accommodate the Georgia Port Authority's belief that new shipping business must be brought to Savannah. A preliminary economic study has shown that the costs of the harbor expansion far outweigh the potential benefits, even before necessary environmental mitigation costs are included in the analysis. The Army Corps of Engineers has failed to conduct studies to address many of the environmental impacts, while numerous state and federal envi-

ronmental agencies have stated repeatedly that the decision to deepen the harbor is premature.

We oppose the $100,000 appropriation included in the President's budget for the Savannah Harbor Expansion, and urges re-direction of these funds into further study of the environmental consequences of this potentially destructive project.

BIG SUNFLOWER DREDGING AND YAZOO PUMP PROJECT, MISSISSIPPI

The Big Sunflower River "Maintenance" project and Yazoo Backwater Pumping Station are part of an environmentally-destructive Corps plan to re-plumb the Mississippi River Delta through a series of water diversions and channels. The Big Sunflower project involves dredging of the entire width of the Mississippi River for 104 miles—to reduce seasonal flooding by only a few inches. The Yazoo Backwater Pump Project would create the world's largest pump system to move water from south Delta wetlands into the Mississippi River, disrupting natural water cycles in some of the last intact bottomland hardwood forests and forested wetlands in the Mississippi Delta.

We oppose the Administration's request for $500,000 to fund the Yazoo pump and $3.9 million for dredging. We support re-directing these funds to reforestation, as a non-structural alternative to flood control and other environmentally-sound projects to benefit the area. While the pump project alone is estimated to cost at least $150 million to complete, cost estimates performed by EPA for reforestation and easement purchases would only be around $75 million.

ST. JOHNS/NEW MADRID FLOODWAY, MISSOURI

Audubon strongly opposed this economically and environmentally-indefensible project which would destroy 36,000 acres of wetlands and 75,000 acres of valuable backwater habitat to create new farmland. It is being advanced despite the fact that the Federal Government is currently producing large grain surpluses and most farmers are suffering from the resulting low prices. While being promoted as flood control, the project would have little effect on flooding of nearby communities and the farmland itself would be subject to frequent flooding. Audubon supports redirection of the Administration-requested $7.8 million to economically-beneficial, yet environmentally sound development projects in the area.

DEVILS LAKE EMERGENCY OUTLET, NORTH DAKOTA

Audubon supports de-funding of this environmentally-damaging project to create an outlet from Devils Lake to the Sheyenne River. The outlet would reduce surface elevations of Devils Lake by only inches, yet would contribute to increased flooding and reduced water quality downstream and potentially violate an international treaty with Canada. None of the Administration-requested $10 million should be appropriated for this project.

This Subcommittee has done an excellent job of opposing this project in the past, and we commend you for your valiant efforts. We urge you to continue your opposition to the project, and we will continue to support you in your efforts.

Thank you for providing us with this opportunity to testify on the Corps budget request.

PREPARED STATEMENT OF THE UNIVERSITY OF MIAMI

Mr. Chairman and Members of the Subcommittee: I am privileged to have the opportunity to submit this statement on behalf of Rosenstiel School of Marine and Atmospheric Science at the University of Miami in Coral Gables, Florida.

Respectfully, the University, joined by the City of Miami Beach, Florida seeks your support for the establishment of a demonstration project in Miami Beach which could arrest the continuing problem of coastal erosion, particularly in the cities of Miami Beach, Surfside, and Bal Harbour, Florida. This demonstration project would focus on the 12 miles of sandy beaches between Bakers Haulover Inlet and Government Cut.

By the mid-seventies, this beach segment had severely eroded, leaving only a small area of dry beach during low water. To prevent loss of land and to prevent damage to existing structures from storm surge, many of the adjacent properties had to be protected by sea walls and revetments. Because of the lack of sufficient dry beach, tourism declined, which has adverse effects on the economy of the region.

To remedy some of these problems, in 1975, the U.S. Army Corps of Engineers (ACOE), in partnership with Miami-Dade County, initiated the Miami-Dade County Beach Erosion Control and Hurricane Surge Project. At that time, Miami-Dade

County and the ACOE entered into a 50-year contract for the joint management of Miami-Dade's sandy beaches. During the period 1979–1982, the ACOE constructed a hurricane dune and nourished the beaches between Bakers Haulover Inlet and Government Cut. A total of 60 million cubic yards of sand was placed on the beach thereby increasing its width to 300 feet. The implementation of the beach nourishment has had a tremendously positive effect on the economy of the region.

In judging the performance of the project, it should be realized that beach nourishment is a repeat process and, based on experience with other beaches, should be carried on the average of every 5 years. The Miami Beach Nourishment, has a considerable better track record. Only after some 15 years were there areas that needed to be renourished. However at this time, 20 years after the start of the original nourishment, the beach as a whole has eroded to an extent that a large scale renourishment seems unavoidable unless a return to the situation in the mid 1970s is accepted. The major problem is where to find sand in sufficient quantities to resupply the beaches, as the near-shore deposits of sand which have been the source for the nourishment project have been exhausted.

The erosion along the beaches between Bakers Haulover Inlet and Government Cut is not uniform. Since the implementation of the nourishment during the period 1979–1982, the northern two-third has steadily eroded whereas the southern one-third has accreted. Furthermore, in the erosional part there are "hot spots" where the erosion is much more severe than in others. The reason for this situation is not directly obvious and has to do with the local off-shore bathymetry, wave climate, and sediment characteristics. In addition, Bakers Haulover Inlet plays an important role in the erosion along the beaches of Bal Harbor and Surfside. The present shoreline is irregular in plain view—rather than a smooth curve between the two inlets—and is characterized by indentations and protrusions.

Although there is some transfer of sand across the inlets, to a first approximation the area between the two inlets can be considered a self-contained littoral cell. The seaward boundary of that cell is not known and the big question is how much sand is lost to the offshore. The remaining sand is redistributed in the cell by waves. From a recent study, it is known that sand eroded from the northern two thirds of beach can be traced to the southern one-third of the beach. Also, bathymetric surveys show that the beach does not conform to the straight design slope of 1:40. The actual beach slope is gentler and the underwater beach shows a bar. This leads to a loss of dry beach.

As suggested earlier, the causes of the irregular appearance of the shoreline, the presence of erosional "hot spots" and the shape of the beach profile are related to offshore bathymetry, wave climate, and the characteristics of the beach sand. Therefore, to identify the cause(s) of erosion, to explain the presence of the erosional "hot spots" and to predict the anticipated beach profile, information is needed on bathymetry, wave climate, and sediment characteristics.

None of this information is in sufficient detail and will require measurements, the results of which would be interpreted using computer models. Deep-water waves will be carried inshore to calculate the wave characteristics at breaking. From this information, long-shore currents, sediment transport and changes in bathymetry, including the position of the shoreline will be calculated. The measurements will allow construction of an improved sediment budget. For this effort, the beach would be divided into compartments, both in the long-shore and cross-shore direction. The principle of conservation of sand would be applied to each compartment, i.e., the rate of change of the sediment volume in each compartment would equal the volume of sediment in minus the volume of sediment leaving the compartment. Comparison with observed changes in bathymetry, including changes in beach profile, should identify the causes of erosion and erosional "hot spots" as well as the shape of the beach profile.

The City of Miami Beach remains committed to identifying outside sources of sand and expediting the evaluation of the environmental, physical and economic viability of the potential sources, to ensure that sufficient quantities of beach-quality sand are available to fulfill future needs. However it is realized that continuing to pump sand to the beaches without addressing the underlying causes of erosion, will lead to an endless cycle of needing more, increasingly expensive sand.

Another possible solution is to transfer sand from the southern accretional part to the northern erosional part of the beach. Recycling will reduce the dependence on outside sources of sand.

Although presently beach nourishment is the accepted way to combat erosion, the lack of sand sources requires us to rethink the process. It could well be that for Miami Beach a combination of beach nourishment and hard structures (e.g., offshore breakwaters) is a more desirable solution. The hard structures would reduce the sand losses and more importantly when located properly, would concentrate the

sand that has eroded from the beaches in places where it can be retrieved by dredges.

The measurements and subsequent analysis referred to in the previous section should help to optimize the use of outside sand sources and the recycling technique and provide the necessary knowledge to properly design combined measures of nourishment and hard structures.

To arrive at a solution to the erosion problem, the City of Miami Beach in cooperation with the University of Miami is suggesting a two-prong approach consisting of the development of a long-term beach management plan and the implementation of two demonstration projects.

Combating beach erosion takes a regional (the beach area between the two inlets) rather than a local ("hot spots") approach. The first order of business in establishing a beach management plan is to identify the causes of the beach erosion and to determine whether there exists an equilibrium shoreline position and equilibrium beach profile. After that the questions of how, where and when to combat erosion can be addressed. This includes the question whether hard structures should be included. An important item in arriving at answers to these questions is the development of an improved sediment budget. In view of the necessary field measurements, the development of the beach management plan is expected to take 5 years.

Mr. Chairman, the University of Miami is pleased to be an active partner of the City of Miami Beach, Florida in an effort to provide an efficient, cost-effective remedy for the continuing coastal erosion problems along the southeast Atlantic Coast. We are convinced that the results of this proposed demonstration project will make an important contribution to gaining a permanent solution to the problem.

To accomplish this important program the University of Miami, in partnership with the City of Miami Beach, seeks $8 million from the Energy and Water Development Appropriations Subcommittee through the U.S. Army Corps of Engineers. Your support would be appreciated, Mr. Chairman. My colleagues and I at the University of Miami thank you for the opportunity to present these views for your consideration.

PREPARED STATEMENT OF THE CITY OF MIAMI BEACH, FLORIDA

The City of Miami Beach appreciates the opportunity to submit for the record (1) testimony on an innovative new beach erosion control initiative, and (2) testimony in support of the request by Miami-Dade County for beach renourishment funds.

INNOVATIVE BEACH EROSION PREVENTION AND SAND RECYCLING SYSTEM DEMONSTRATION PROJECT

Dade County, Florida has approximately 15 miles of sandy beaches. The Miami Beach Segment makes up 10.5 miles or 70 percent of that beach front area. The Miami Beach Segment is bounded to the north by Baker's Haulover inlet and to the south by Government Cut Inlet. The construction of these inlets, just after the turn of the century, left the Miami Beach Segment isolated between two complete barriers to along-shore sand migration. As a result, the Miami Beach Segment continuously loses sand through natural processes but can only regain sand through artificial means.

In the years that followed the construction of the inlets, the Miami Beach shoreline steadily receded. By the mid-1970's the shoreline had receded more than 500 feet and most of the sandy beaches had been lost. Property owners were forced to build seawalls, bulkheads and other hardened structures to prevent the coastal infrastructure from being undercut by the encroaching tides.

In 1975, the U.S. Army Corps of Engineers (ACOE), in partnership with Dade County, initiated the Dade County Beach Erosion Control and Hurricane Surge Protection Project. At that time, Dade County and the ACOE entered into a 50 year contract for the joint management of Dade's sandy beaches. In 1979, the ACOE constructed a flood control dike (sand dune) and an "engineered" beach along the entire length of Miami Beach. The project added more than 300 feet to the width of the severely eroded beaches. The new beach was a tremendous success and has been credited for contributing significantly to the resurgence of our local economy.

The sand used to nourish the beaches was hydraulically dredged from deposits of sand about a mile off our coast. More than 16 million cubic yards of sand were used during the initial beach construction and an additional 5 million cubic yards have been used in the periodic renourishment of segments of the project. However, the near shore deposits of sand which have been the source for the renourishment projects have been exhausted. There is not enough sand remaining to meet the immediate needs of the critically eroded shoreline areas nor are there any strategic

reserves to be used in the event that our shorelines are ravaged by a hurricane or other natural disaster.

Engineers have determined that Miami Beach loses sand to erosion at an average rate of 250,000 cubic yards per year, with that rate increasing ten-fold during years of heavy storm activity. Faced with a continuing need for a quarter million tons of sand per year for the maintenance of our beaches and an exhausted supply of local sand, the City of Miami Beach realized that immediate action was needed to avert a crisis. Our initial reaction was to try to locate alternate sources of beach-quality sand. The City advertised its interest in locating sand sources, traveled across Florida & the Caribbean to visit potential sources, compiled a database of source location & quality information, and secured an invitation for the Army Corps of Engineers to conduct testing of several potential sources of high-quality carbonate sands in the Turks & Caicos Islands.

The City remains committed to identifying alternate sources of sand and expediting the evaluation of the environmental, physical and economic viability of the potential sources, to ensure that sufficient quantities of beach-quality sand are available to fulfill our future needs. However, we have realized that continuing to pump sand on to our beaches without addressing the underlying causes of the erosion, will leave us in an endless cycle of needing more, increasingly expensive sand.

If the erosion cycle can be successfully slowed, it would reduce the demand for additional sand and save millions of dollars in renourishment costs; not to mention the elimination of the environmental, public and legal challenges to renourishment projects. To achieve this goal, the City embarked upon a program to develop innovative technologies which will help prevent beach erosion processes.

Analysis of our coastal system revealed the presence of several "hot spot" areas along our shoreline which accounted for the majority of the sand losses. Analysis of the data also revealed the presence of an area of substantial sand accretion (accumulation) in a near shore area near the southern end of Miami Beach.

The causative factors behind these hot spots have been linked to changes in the shape (compass orientation) of the coastline and benthic topographical anomalies in the nearshore area. The worst of these hot spots exist within two half-mile long areas along our shoreline. These two hot spots have been shown to be responsible for the loss of almost 200,000 cubic yards of sand each year. The hot spots also accelerate the erosion of the adjacent beaches for as much as a mile to the north, as the sand from the adjacent beaches slough down to fill the voids within the hot spots. With beach renourishment costs of about $14/cubic yard of sand, these hot spots are responsible for the loss of more than 2.5 million dollars annually.

After detailed examination of the available data and careful consideration of the possible alternatives, our coastal engineers have designed a series of detached breakwater structures which will significantly reduce the rate of erosion within these hot spot areas and help to stabilize large sections of our beach. The size and configuration of these structures have been carefully "tuned" to the specific conditions at each of the hot spot areas. Our coastal engineers estimate that the elimination of each hot spot will widen and stabilize approximately one mile of beach. It is believed that these benefits can be gained without significant negative impacts to the down drift beach areas or offshore reefs. Sea turtle nesting in the area will also be enhanced by the widening and stabilization of more than two miles of beach.

The City of Miami Beach and Dade County have jointly initiated an emergency effort to develop and construct breakwater reef structures in the location of the two worst hot spots. Preliminary estimates indicate the breakwater structures will cost approximately $700,000 each. The required funding for the first of set of these structures has already been appropriated and construction is scheduled to begin in mid-2000.

The City's master plan is to develop a series of erosion control breakwaters, positioned in key areas along the shoreline, to widen the beaches and slow the erosion process. Concurrent with the efforts to slow the beach erosion process, we plan to initiate a feasibility study/demonstration project to pursue an innovative and promising potential solution to our sand shortage problem. Our coastal engineers have identified the presence of a highly accretional near-shore area at the southern end of Miami Beach. The area is accreting sand at a rate of more than 200,000 cubic yards per year. Sand is accreting in the area because of the navigational Jetty that juts 1500 yards out to sea, along the north side of the Government Cut Inlet, at the southern tip of Miami Beach. The jetty structure acts as a barrier, blocking the natural, southerly migration of the near shore sand lens, which causes the migrating sand to pile-up on the north side of the structure. As more and more sand piles-up, the sand lens builds and creeps offshore toward the end of the jetty. Because the seaward end of the jetty extends out to the first line of coral reefs which parallel our shoreline, the jetty and the reef line together form a 'trap' which prevents most

of the sand from being able to move further south. This near-shore sand lens is continuing to build and will eventually "over-top" the reef and smother living corals. If authorized, the City will seek to have the overfill accumulating at the southern end of the segment "back passed" or pumped back up to the eroded beaches at the northern end of our beach segment.

The ultimate goal is to utilize the breakwater structures to slow the erosion process, stabilize the beaches and cut the demand for new sand. Then, periodically, the excess fill that accumulates will be recycled back to the beaches at the north end of the system and the cycle will start over. This Sand Recycling System, if successful, will allow for the continued, effective maintenance of our beaches, while offering substantial financial and environmental benefits.

Local government has already made a substantial investment in the development of this process. If approved, this $2.3 million appropriation request will allow the City to complete a thorough engineering analysis of the entire system, obtain the necessary Federal and State permits, and contract for the renourishment of a mile long section of beach utilizing back-passed sand. This project will serve as a demonstration of the effectiveness of the Sand Recycling System and the importance of regional sediment management.

SUPPORT FOR MIAMI-DADE CONSTRUCTION REQUEST

The City of Miami Beach would first like to thank the members of the subcommittee for all their efforts in the past to provide support for the State of Florida's beaches and in particular, those of Miami Beach.

Beaches are Florida's number one tourist "attraction." Last year, beach tourism generated more than $16 billion dollars for Florida's economy and more tourists visited Miami Beach than visited the three largest national parks combined.

In addition to their vital economic importance, beaches are the front line defense for multi-billion dollar coastal infrastructure during hurricanes and storms. When beaches are allowed to erode away, the likelihood that the Federal government will be stuck with astronomical storm recovery costs is significantly increased. The Army Corps of Engineers estimated that more than 70 percent of the damage caused to upland properties in Panama City Beach by Hurricane Opal could have been prevented if their pending beach renourishment project had been completed before the storm.

The Florida Department of Environmental Protection estimates that at least 276 miles (35 percent) of Florida's 787 miles of sandy beaches are currently at a critical state of erosion. This includes the entire six miles of Miami Beach. As a result of the continuing erosion process and more dramatically, recent intense storms which have caused tremendous damage to almost all of the dry beach and sand dune throughout the middle segment of Miami Beach. Two years ago, most of the Middle Beach dune cross-overs were declared safety hazards and closed, as the footings of the boardwalk itself were in immediate jeopardy of being undercut by the encroaching tides. If emergency measures, costing approximately $400,000 had not been taken by the City, there would have been considerable risk of coastal flooding west of the dune line in residential sections of Miami Beach. As you can see, this example points to the commitment we as a beach community have to our beaches, but federal assistance remains crucial. While we are thankful of the substantial commitment made by the subcommittee in the fiscal year 1999 Energy and Water Conference Report, there is still much work to be done. Our beaches must be maintained not only to ensure that our residents and coastal properties are afforded the best storm protection possible, but also to ensure that beach tourism, our number one industry, is protected and nurtured.

In 1987, the Army Corps of Engineers and Metropolitan Dade County entered into a fifty year agreement to jointly manage restore and maintain Dade County's sandy beaches. Since then, Metropolitan Dade County has been responsible for coordinating and funding the local share of the cost for the periodic renourishment of our beaches.

In order to ensure that adequate funding will continue to be available, the City of Miami Beach supports and endorses the legislative priorities and appropriation requests of Metropolitan Dade County, as they relate to the restoration and maintenance of Dade County's sandy beaches. Specifically, the City respectfully adds their strong support for the efforts of Miami-Dade County and wholeheartedly supports their fiscal year 2001 request for $8 million in beach renourishment funds.

Your support would be appreciated, Mr. Chairman. The City of Miami Beach thanks you for the opportunity to present these views for your consideration.

PREPARED STATEMENT OF THE UNIVERSITY OF MICHIGAN

The U.S. Department of Energy (DOE) has provided support to the DOE University Research Program in Robotics to pursue long range research leading to the: "development and deployment of advanced robotic systems capable of reducing human exposure to hazardous environments, and of performing a broad spectrum of tasks more efficiently and effectively than utilizing humans."

The DOE University Research Program in Robotics (URPR) has proven highly effective in technology innovation, education, and DOE mission support. The URPR incorporates mission-oriented university research into DOE EM's Office of Science and Technology (OST) and, through close collaboration with the DOE national laboratories, provides an avenue for applying innovative solutions to problems of vital importance to DOE.

The URPR would like to thank the Committee members for their historically strong support of this highly innovative and successful program. Although the DOE EM–50 Budget Request for fiscal year 2001 fails to include explicit funding numbers for any university program, the URPR expects to be funded at $4.0 million from the larger Focus Area budgets. The URPR is requesting the Committee: (1) explicitly direct research funding of the URPR, and (2) consider augmenting this amount to $4.35 million to compensate for DOE's expansion of the Consortium to include the University of New Mexico.

Request for the Committee

We request the Committee include explicit language directing $4.35 million of EM–50 research funds to the University Research Program in Robotics (URPR) for development of safer, less expensive, and more effective robotic technology for environmental restoration and waste management solutions.

DEVELOPING ADVANCED ROBOTICS FOR DOE AND THE NATION

Develop robotic solutions for work in hazardous environments and facilitate cleanup operations

The goal of this program is to advance and utilize state-of-the-art robotic technology in order to remove humans from potentially hazardous environments and expedite remediation efforts now considered essential. This is increasingly necessary because human radiation exposure limits have been further reduced during the last two years. Established by DOE in fiscal year 1987 to support advanced nuclear reactor concepts, the project was relocated to EM to support higher priority needs in environmental restoration. The project has produced an impressive array of technological innovations which have been incorporated into robotic solutions being employed across federal and commercial sectors. This successful program demonstrates efficient technology innovation while educating tomorrow's technologists, inventing our country's intelligent machine systems technology of the next century, and meeting today's technology needs for DOE.

Robotics: A Strategic National Technology

R&D funding is the most effective use of federal funds to promote the nation's well-being according to a 1997 published poll of respected academic economists. And, as documented in previous testimonies, key national studies (by the Council on Competitiveness, DOD, and former OTA technology assessment reports) consistently list robotics and advanced manufacturing among the five most vital strategic technologies for government support. During the past year, reports from NSF, the OSTP report on critical technologies, and the report from the President's Advisory Committee on Information Technology suggests that the areas of greatest concern to the nation are: the economy, education, health care, and the environment. The URPR is making technology contributions affecting each of these key areas. Furthermore, the reports note key technology areas include information technology and nanotechnology, and key enabling technologies include manufacturing and materials. The URPR actively participates in advancing these fields. The national need for an investment in the development of intelligent machines which can interact with their environment has been universally recognized for over a decade.

Intelligent Machines: Grand Challenge for the New Millennium

Significant advances in computing power, sensor development and platform architectures (e.g., unamanned airborne vehicles) have opened new opportunities in intelligent machine technology. The long-range implications of intelligent mobile and dextrous machines which can assist humans to perform daily life tasks are clearly significant and represent one of technology's Grand Challenges for the new millennium. We can expect to see intelligent prosthetic devices, smart transport vehicles,

and mobile devices capable of assisting or replacing the human, not only in potentially hazardous situations, but in daily life. Just during the past year, small mobile vehicles have become available to the everyday consumer, including the RoboMow lawn mower, and the hovering DragonFly—both available for less than $1,000. Furthermore, the integration of intelligent mobile machines onto or into the human body is within reach.

URPR: INNOVATION, EDUCATION, AND DOE MISSION SUPPORT

URPR: Refining the Right Paradigm

The URPR instantiates the new paradigm recommended for Federal investment in national S&T by the National Science Board (3/6/98) that emphasizes the integration of long-range research and education. The URPR's strategic mission is to make significant advances in our nation's intelligent machine and manufacturing technology base while emphasizing: education, technology innovation through basic R&D, and DOE mission support. Furthermore, the Consortium of Universities (Universities of Florida, Michigan, Tennessee, Texas, and New Mexico) are united as a powerful technology team, governed by a national Board of Directors, advised by a Technical Advisory Committee, and managed by a group of DOE and national laboatory officials.

The URPR has demonstrated in earlier years that the advantages of operating as a consortium are significant. The institutions of the URPR partitioned technology development into manageable sections which allowed each to concentrate within their area of expertise (efficiently maintaining world-class levels of excellence) while relying on their partners to supply supporting concentrations. With full cooperation of the host universities, this effort naturally generated the in-depth human and equipment capital required by the EM community. Practically, the long-term distributed interaction and planning among these universities in concert with the DOE labs and associated industry allows for effective technology development (with software and equipment compatibility and portability), for a vigorous and full response to application requirements (component technologies, system technologies, deployment issues, etc.), and for the supported application of the technology. Considering the remarkable achievements of URPR over its history and the enlightened commitment of EM–50 to this technology development, the URPR is now poised to enhance its prominent role in education, technology innovation, and DOE mission support.

Educating the New Millenium's Technologists

The URPR has already educated about 500 advanced degree students in the critical engineering fields, including many with earned doctoral degrees. These students have entered the work force, and are leading the industrial resurgence based on intelligent machines, advanced manufacturing technology, and high-technology related fields. Graduates from this project have built successful startup companies and made industrial technology transfers in computer and robotic technology (MI, TN, TX) and medical imaging (MI), video databases (CA), and intelligent manufacturing (MI, FL, TX). We have been unable to meet the strong demand for graduates educated through this project.

DOE Mission Contribution—Environmental Cleanup

Since its inception, EM has recognized robotics as an essential technology to accomplish its mission. The motives for undertaking a comprehensive R&D effort in the application of advanced robotics to EM tasks in hazardous environments reflect both economic considerations, efficiency, effectiveness, and health and safety concerns. The RBX is a national laboratory program which primarily applies commercially available technology to current problems. In contrast, the URPR supports needs-driven applied research to develop innovative and synergistic technologies in support of EM focus areas. A major accomplishment during fiscal year 2000 was the identification and establishment of a process by which URPR innovations could be transferred to field applications. Both the Secretary of Energy's Robotics and Intelligent Machines (RIM) Initiative and the RBX's fiscal year 2001 proposals recognize the URPR as providing the core research effort.

URPR progress is evaluated annually by a thorough review of its technical accomplishments, and DOE validated technology needs (generated by the DOE EM Focus Area representatives and Site Technology Coordination Groups) are used to set the program's directions. The URPR has consistently received high rankings for providing both outstanding technical contributions and value. Future success of this program is expected to continue based upon the Consortium's productive history.

Over the past few years, the URPR projects successfully supported the following EM projects:

—deployment and testing of SWAMI, an autonomous inspection robot for Fernald stored waste drums,
—design, construction and demonstration of a robot to precisely map large DOE facilities, such as K–25 and K–27 in Oak Ridge, in preparation for decontamination and decommissioning (D&D),
—delivery of a robotic handling system for an automated chemical and radiological analysis system to Los Alamos,
—remote radiation mapping of the MSRE facility at ORNL during D&D operations.
—design and implementation of a real-time controller for use at Hanford in support of the tank waste retrieval project
—design and fabrication of a prototype Soil Sample Preparation Module in support of the Contaminant Analysis Automation project at LANL.

Recent URPR technology achievements have included:
—Discover Magazine Award for Technological Innovation: Robotics, presented by the Secretary of Energy.
—Invention of the room-temperature semiconductor radiation sensor that holds the world's record for energy resolution.
—Development of a mutisensor visualization platform to aid operators during D&D operations.
—Development of a system to reduce the time between a site-defined need and a site-delivered implementation of the robotic and/or automation hardware using simulation of components.
—Codified algorithms for assembly of standardized modules to produce the complex manipulators needed for a wide range of hazardous tasks.
—Development of a system to reduce the time between a site-defined need and a site-delivered implementation of the robotic and/or automation hardware using simulation of components.

As shown above, URPR efforts are linked both directly and indirectly to cleanup operations in the DOE complex. During fiscal year 2001, the URPR plans to continue its focussed efforts on DOE field cleanup applications, while maintaining our commitment to research and education.

Innovation—the seed of future technology

The URPR has produced prodigious levels of innovation in research and development. While recent demonstrations reveal next-generation technologies, even more advanced capabilities are emerging from the laboratories. These include new types of locomotion, navigation techniques, sensing modalities (radiation cameras and flash-fast imaging devices), environmentally hardened components, and dextrous open architecture manipulators. These devices will evolve and inspire the intelligent machines of the future, including smart automobiles, obstacle avoidance aids for the disabled, and agile manufacturing cells capable of being rapidly reconfigured.

This level of innovation can also be seen in the following statistics:
—Approximately 16 patents awarded or pending.
—Over 750 technical papers published in technical journals and conferences.
—The standard technical books for vision, radiation detection and imaging, and robotics are authored by researchers working with this project. Faculty and senior scientists dedicated to this project are the internationally renowned technologists of their fields.
—A suite of world-class robots (including CARMEL, winner of the AAAI Mobile Robot Competition) serve as the research testbeds for this project.

PROGRAM REQUEST

During fiscal year 2000, the URPR provided vital contributions to education and research while meeting DOE technology needs. The motivation for this project remains steadfast—removing humans from hazardous environments while enhancing safety, reducing costs, and increasing cleanup task productivity. EM–50 has recognized the URPR's role and mission and has purportedly included $4 million in the larger Focus Area requests for the URPR in fiscal year 2001.

REQUEST FOR THE COMMITTEE

We request that the Committee (1) explicitly direct research funding of the URPR, and (2) consider augmenting this amount from $4 million to $4.35 million to compensate for DOE's expansion of the Consortium. The following language is suggested for the fiscal year 2001 Energy and Water Appropriations Bill:

Funding of $4.35 million is provided for the University Research Program in Robotics (URPR) to develop and deploy innovative technology in support of EM site needs.

PREPARED STATEMENT OF THE COUNTY OF VOLUSIA, FLORIDA

On behalf of our citizens and fishermen, Volusia County, Florida, is requesting that the Subcommittee appropriate $1,000,000 in fiscal year 2001 from the U.S. Army Corps of Engineers (COE) Construction account to fund an 1000 foot oceanward extension of the South Jetty of the Ponce DeLeon Inlet. This funding is essential to protect the Inlet, along with the existing North Jetty and its landward extension funded by this committee in fiscal year 1999. In addition, Volusia County requests that the committee appropriate $100,000 in fiscal year 2001 from the COE's General Investigations account to fund the reconnaissance study authorized by a resolution adopted by the Transportation and Infrastructure Committee on February 16, 2000. A more detailed case history and description of the situation and projects follow below.

The Ponce DeLeon Inlet is located on the east coast of Florida, about 10 miles south of the City of Daytona Beach in Volusia County. The Inlet is a natural harbor connecting the Atlantic Ocean with the Halifax River and the Indian River North. The Ponce DeLeon Inlet provides the sole ocean access to all of Volusia County. Fishing parties and shrimp and commercial fisherman bound for New Smyrna Beach or Daytona Beach use the Inlet, as well as others entering for anchorage. Nearby fisheries enhanced by the County's artificial reef program attract both commercial and sport fisherman. Head boat operators also provide trips to view marine life and space shuttle launches from Cape Canaveral. In addition, there is a U.S. Coast Guard Lifeboat Station on the east shore of the Indian River less than a mile south of the Inlet.

Unfortunately, the Inlet is highly unstable and, despite numerous navigation projects, continues to threaten safe passage for the charter boat operators and commercial fisherman who rely on the access it provides for their livelihood. Recreational boaters and Coast Guard operations are also at risk passing through this unstable inlet. The shoaling of the channels in the Inlet so restricts dependable navigation that the Coast Guard no longer marks the north channel in order to discourage its use. The Coast Guard continues to move the south and entrance channel markers and provides warnings that local knowledge and extreme caution must be used in navigating the inlet. More seriously, the Coast Guard search and rescue data for fiscal years 1981–1995 show that 20 deaths have resulted from vessels capsizing in the Inlet, the direct result of the Inlet's instability. 147 vessels capsized and 496 vessels ran aground in the Inlet during the same period.

The Federal interest in navigation through the Ponce DeLeon Inlet dates back to 1884 and continues to the present. The existing navigation project was authorized by the Rivers and Harbors Act of 1965. The construction authorized by that Act, including ocean jetties on the north and south sides of the Inlet, was completed in July 1972. It became evident soon after completion of the authorized project that the project did not bring stability to the Inlet. A strong northeaster in February 1973 created a breach between the western end of the North Jetty and the sand spit the Jetty was connected to inside the Inlet. The breach allowed schoaling to occur that was serious enough to close boat yards and require almost $2 million worth of repairs, including extending the western end of the North Jetty.

Under the existing maintenance agreement entered into upon completion of the construction, the COE periodically performs maintenance on the Inlet. Maintenance projects have included several dredging efforts, adding stone sections to the south side of the north jetty, extending the westward end of the North Jetty for the second time, and closing the North Jetty weir. Prior to the North Jetty project discussed below, the COE's last maintenance was dredging, completed on the entrance channel in January 1990.

In fiscal year 1998, the COE received a $3,500,000 appropriation for emergency maintenance on the North Jetty. Migration of the entrance channel undermined the North Jetty, seriously threatening its structural integrity. The fiscal year 1998 funds were used to construct a granite rock scour apron for the 500 to 600 feet of where the Jetty is undermined.

In fiscal year 1999, the COE received $4,034,000 from the Operations and Maintenance account to extend the North Jetty of the Inlet landward by 800 feet. This maintenance project is underway and intended to be completed as soon as possible to prevent erosion that will cause outflanking of the North Jetty. Continued outflanking of the west end of the North Jetty could create a new inlet for the Halifax

and Indian Rivers resulting in major changes to the Ponce DeLeon Inlet. The resultant shoaling of both the north and south channels, as well as changes to the entrance channel, would make passage through the inlet extremely dangerous and unpredictable.

In the current fiscal year, the COE received $7,696,000 in their Operations and Maintenance account for use in the Ponce DeLeon Inlet. These funds will provide the balance of the funding to complete the North Jetty project, funding for surveys designed to determine the scope of a new maintenance contract for the Ponce De Leon Inlet, and funding for a dredging project to address a minor maintenance issue under the existing maintenance contract.

For the next fiscal year, Volusia County requests that the COE receive $1 million of the $2.988 million federal share of the construction funds for the South Jetty oceanward extension. The COE anticipates that the construction of the jetty extensions will help stabilize the Inlet and reduce future maintenance costs.

The Ponce DeLeon Inlet presents a serious engineering challenge; the success of which is measured in terms of human life and vessel damage. The existing project has failed to stabilize the Inlet. Extending the North Jetty was the first step toward correcting the failure and meeting the challenge. Funding the beginning phase of the 1000 foot oceanward extension of the South Jetty in fiscal year 2001 is the next critical step toward providing safe passage for the commercial and recreational boaters in Volusia County. In addition, providing these funds at this time is likely to prevent the need to a much more substantial maintenance project in the near future.

In addition to the jetty projects to protect the Ponce DeLeon Inlet, the County also requests funding for the COE to complete in fiscal year 2001, a reconnaissance study to address the critical erosion along the County's 49.5 miles of ocean shoreline. In August 1991, the COE completed a favorable reconnaissance report for the shore protection study authorized by the House Transportation and Infrastructure Committee in September 1988. The County declined to act as the non-federal sponsor for the feasibility study at that time. As a result of heavy damage to the County's shoreline sustained during the 1999 hurricane season, the County recognizes the critical need to address the growing impact of the storm-induced erosion. The COE advises the County that the shore protection reconnaissance study can be completed in fiscal year 2001 for $100,000.

Thank you for your consideration of this request.

PREPARED STATEMENT OF THE SEMINOLE TRIBE OF FLORIDA

The Seminole Tribe of Florida is pleased to submit this statement regarding the fiscal year 2001 budget for the Army Corps of Engineers (COE). The Tribe asks that Congress provide $20.525 million in the COE's construction budget for critical projects in the South Florida Ecosystem, as authorized in section 208 of the Water Resources Development Act (WRDA) of 1999. On January 7, 2000, the Tribe and the COE signed a Project Coordination Agreement for the Big Cypress Reservation's critical project. The Tribe's critical project includes a complex water conservation plan and a canal that transverses the Reservation. In signing this Agreement, the Tribe, as the local sponsor, committed to funding half of the cost of this approximately $50 million project.

The Tribe's critical project is a part of the Tribe's Everglades Restoration Initiative, which includes the design and construction of a comprehensive water conservation system. This project is designed to improve the water quality and natural hydropatterns in the Big Cypress Basin. This project will contribute to the overall success of both the Federal and the state Governments' multi-agency effort to preserve and restore the delicate ecosystem of the Florida Everglades. In recognition of this contribution, the Seminole Tribe's Restoration Initiative has been endorsed by the South Florida Ecosystem Restoration Task Force and has been found to be consistent with the recommendations of the Governor's Commission for a Sustainable South Florida.

THE SEMINOLE TRIBE OF FLORIDA

The Seminole Tribe lives in the Florida Everglades. The Big Cypress Reservation is located in the western basins, directly north of the Big Cypress National Preserve. The Everglades provide many Seminole Tribal members with their livelihood. Our traditional Seminole cultural, religious, and recreational activities, as well as commercial endeavors, are dependent on a healthy Everglades ecosystem. In fact, the Tribe's identity is so closely linked to the land that Tribal members believe that if the land dies, so will the Tribe.

During the Seminole Wars of the 19th Century, our Tribe found protection in the hostile Everglades. But for this harsh environment filled with sawgrass and alligators, the Seminole Tribe of Florida would not exist today. Once in the Everglades, we learned how to use the natural system for support without harm to the environment that sustained us. For example, our native dwelling, the chickee, is made of cypress logs and palmetto fronds and protects its inhabitants from the sun and rain, while allowing maximum circulation for cooling. When a chickee has outlived its useful life, the cypress and palmetto return to the earth to nourish the soil.

In response to social challenges within the Tribe, we looked to our Tribal elders for guidance. Our elders taught us to look to the land, for when the land was ill, the Tribe would soon be ill as well. When we looked at the land, we saw the Everglades in decline and recognized that we had to help mitigate the impacts of man on this natural system. At the same time, we acknowledged that this land must sustain our people, and thereby our culture. The clear message we heard from our elders and the land was that we must design a way of life to preserve the land and the Tribe. Tribal members must be able to work and sustain themselves. We need to protect the land and the animals, but we must also protect our Tribal farmers and ranchers.

Recognizing the needs of our land and our people, the Tribe, along with our consultants, designed a plan to mitigate the harm to the land and water systems within the Reservation while ensuring a sustainable future for the Seminole Tribe of Florida. The restoration plan will allow Tribal members to continue their farming and ranching activities while improving water quality and restoring natural hydroperiod to large portions of the native lands on the Reservation and ultimately, positively effecting the Big Cypress National Preserve and Everglades National Park.

The Seminole Tribe's project addresses the environmental degradation wrought by decades of federal flood control construction and polluted urban and agricultural runoff. The interrupted sheet flow and hydroperiod have stressed native species and encouraged the spread of exotic species. Nutrient-laden runoff has supported the rapid spread of cattails, which choke out the periphyton algae mat and sawgrass necessary for the success of the wet/dry cycle that supports the wildlife of the Everglades.

The Seminole Tribe designed an Everglades Restoration project to allow the Tribe to sustain ourselves while reducing impacts on the Everglades. The Seminole Tribe is committed to improving the water quality and flows on the Big Cypress Reservation. We have already committed significant resources to the design of this project and to our water quality data collection and monitoring system. We are willing to continue our efforts and to commit more resources, for our cultural survival is at stake.

SEMINOLE TRIBE'S BIG CYPRESS CRITICAL PROJECT

The Tribe has developed a conceptual water conservation plan that will enable us to meet new water quality standards essential to the cleanup of our part of the Everglades ecosystem and to plan for the storage and conveyance of our water rights. The Tribe's Everglades Restoration Initiative is designed to mitigate the degradation the ecosystem has suffered through decades of flood control projects and urban and agricultural use and ultimately to restore the nation's largest wetlands to a healthy state.

The Seminole Tribe's critical project provides for the design and construction of water control, management, and treatment facilities on the western half of the Big Cypress reservation. The project elements include conveyance systems, including major canal bypass structures, irrigation storage cells, and water resources areas. This project will enable the Tribe to meet proposed numeric target for low phosphorus concentrations that is being used for design purposes by state and federal authorities, as well as to convey and store irrigation water and improve flood control. It will also provide an important public benefit: a new system to convey excess water from the western basins to the Big Cypress National Preserve, where water is vitally needed for rehydration and restoration of lands within the Preserve.

CONCLUSION

Improving the water quality of the basins feeding into the Big Cypress National Preserve and the Everglades National Park is vital to restoring the Everglades for future generations. By granting this appropriation request, the Federal Government will be taking a substantive step towards improving the quality of the surface water that flows over the Big Cypress Reservation and on into the delicate Everglades ecosystem. Such responsible action with regard to the Big Cypress Reservation, which

is federal land held in trust for the Tribe, will send a clear message that the Federal Government is committed to Everglades restoration.

The Seminole Tribe is ready, willing, and able to begin work immediately. Doing so will require substantial commitments from the Tribe, including the dedication of over 2,400 acres of land for water management improvements. However, if the Tribe is to move forward with its contribution to the restoration of the South Florida ecosystem, a substantially higher level of federal financial assistance will be needed as well.

The Tribe has demonstrated its economic commitment to the Everglades Restoration effort; the Tribe is asking the Federal Government to also participate in that effort. This effort benefits not just The Seminole Tribe, but all Floridians who depend on a reliable supply of clean, fresh water flowing out of the Everglades, and all Americans whose lives are enriched by this unique national treasure.

Thank you for the opportunity to present the request of the Seminole Tribe of Florida. The Tribe will provide additional information upon request.

OHIO RIVER VALLEY INLAND NAVIGATION PROJECTS

STATEMENT OF THE NATIONAL MINING ASSOCIATION

SUMMARY

The National Mining Association (NMA) represents companies whose products often must depend on the availability of adequate safe, and efficient inland waterways barge freight services. NMA's member companies are producers of coal and other metallic and nonmetallic minerals, manufacturers of mining machinery and equipment, and providers of mining-related services. With that in mind, NMA urges the Congress to approve fiscal year 2001 appropriations needed for justifiable improvements in waterway transportation and for effective operation and maintenance of the inland waterways system.

Specifically, NMA urges the Congress to fund certain inland waterways lock and dam construction and rehabilitation at selected lock and dam (L&D) projects required to assure that the Ohio River System is capable of continuing its important function as a principal component of the intermodal rail/barge and truck/barge bulk freight distribution network in the United States, including the Ohio River main stem and connecting Monongahela, Kanawha, and Tennessee Rivers.

Lock and Dam project recommendation	Pre-construction engineering/ design	Construction & rehabilitation
Ohio River Main Stem:		
Olmsted L&D–IL&KY		X
McAlpine L&D–IN&KY		X
J.T. Myers L&D–IN&KY	X	
Newburgh L&D–IN&KY	X	
Cannelton L&D–IN&KY	X	
Greenup L&D–KY&OH	X	
Monongahela River: L&D 2,3,4–PA		X
Kanawha River:		
Marmet L&D–WV		X
London L&D–WV		X
Tennessee River: Kentucky L&D–KY		X

After the termination of Conrail in mid-1999, the states in the Ohio River Basin from Pennsylvania to Illinois were left with only two long-haul railroads, a circumstance that magnifies the need to place a higher priority on Ohio River lock improvements to enable adequate, safe, and efficient barge services from Pittsburgh to the confluence of the Ohio and Mississippi Rivers at Cairo, Illinois. The Ohio River serves the Nation as a vital transportation asset making possible fuel efficient, low emission, cost-effective distribution of bulk commodities, including coal and other products like limestone and materials used in building construction and public and private infrastructure projects free of congestion that would be caused otherwise if those commodities were transported using other surface transportation modes.

COAL, IN PARTICULAR, IS A PRINCIPAL COMMODITY MOVED BY BARGE

During 1998, the Ohio River was utilized to move 132.7 million tons of coal, approximately 55 percent of the 241.9 million tons of total bulk freight commodities carried by barge. The Ohio River System including the main stem of the Ohio River, the Monongahela River in Pennsylvania, the Kanawha River in West Virginia, the Big Sandy River in Kentucky and West Virginia, the Green River in Kentucky, the Cumberland River in Kentucky, together with its connecting Tennessee and Mississippi River Systems, represents vast freight transportation network serving traffic originating both in the Ohio River Basin and in western states having railroad access to the inland waterways system. That interconnected waterways system must be considered an integral component of the Nation's freight transportation network providing wide opportunities for intermodal rail/barge and truck/barge shipments, with ton-miles of barge traffic characterized importantly by its fuel-efficiency, low emissions, and cost-effectiveness in interstate commerce and in furnishing direct access to the Gulf of Mexico for coastal movements and international trade. NMA places emphasis on adequate funding for waterways improvements, especially on the Ohio River and its Upper Ohio River Basin Tributaries and additional connecting rivers in light of five principal considerations:

—The Ohio River is the leading waterway for barge coal traffic, serving distribution of coal produced in Pennsylvania, Ohio, West Virginia, Kentucky, Indiana, Illinois, and Tennessee in eastern and midwestern coal fields, as well as coal produced in the western states and carried by railroad to the rivers.

—Numerous coal-fueled power plants are located on the Ohio River and connecting segments of the waterways system.

—With the termination of Conrail, only two railroads remain in the east for long-haul coal distribution services, CSX Transportation and Norfolk Southern Corporation, each of whom have acquired portions of Conrail, a circumstance that increases the importance of having ready access to barge coal distribution services.

—The four mega-railroads in the United States today, i.e. CSXT, NS, Burlington Northern Santa Fe (BNSF), and Union Pacific (UP), each have river terminal connections with the inland waterways, making intermodal rail/barge coal traffic both viable in many situations and attractive in enabling greater intermodal rail/barge competition with all-rail coal distribution, a factor in stimulating higher cost-effectiveness in overall coal distribution.

—Barge transportation is fuel efficient, a critical factor in regard to fuel conservation and reduction of emissions. In fact, coal traffic moved by barge eliminates much of the surface traffic congestion associated with freight transportation because river barges flow separated from other surface transport modes. The non-intrusiveness of barge movements through, and in the vicinity of, large and small communities located on river banks not only reduces emissions but also contributes substantially to reduction of noise associated with surface traffic, adding to the quality of life enjoyed by the residents while still having local economies strengthened by sound access to essential transportation services required for power generation and the delivery of commodities consumed in construction activities.

RECOMMENDED INLAND WATERWAYS PROJECTS BOTH CONTINUE ONGOING CONSTRUCTION AND FOCUS ON EXPEDITING DIRECTLY RELATED INLAND WATERWAYS IMPROVEMENTS EMANATING FROM YEARS OF STUDY EFFORTS

NMA urges Congress to approve fiscal year 2001 appropriations requests presented in the February 2000 Civil Works Budget Request for the U.S. Army Corps of Engineers with regard to construction and rehabilitation ongoing at several locations for which NMA previously submitted recommendations on appropriations for prior years. This projects are:

Olmsted L&D on the Ohio River.—New L&D incorporating twin 1,200-foot by 110-foot lock chambers, replacing L&D 52 and L&D 53.

McAlpine L&D on the Ohio River.—New L&D incorporating a second 1,200-foot by 110-foot lock chamber.

L&D 2,3,4 on the Monongahela River.—Replacement of two obsolete L&D's and removal of one L&D.

Marmet L&D on the Kanawha River.—New L&D incorporating an 800-foot by 110-foot lock chamber.

London L&D on the Kanawha River.—Rehabilitation of existing L&D.

Kentucky L&D on the Tennessee River.—Addition of a 1,200-foot by 110-foot lock chamber.

Further, NMA urges the Congress to approve Fiscal year 2001 appropriations requests presented in the Civil Works Budget Request for pre-construction engineering and design that would add second 1,200-foot by 110-foot lock chamber at two projects on the Ohio River; and, in addition, NMA urges the Congress to approve two more pre-construction engineering and design activities required for adding second 1,200-foot by 110-foot lock chambers at two other projects on the Ohio River. The first two projects are presented in the Budget Request and the second two projects also are recommended by NMA:

J.T. Myers L&D on the Ohio River.—Pre-construction Engineering and Design.

Greenup L&D on the Ohio River.—same.

Newburgh L&D on the Ohio River.—same.

Cannelton L&D on the Ohio River.—same.

NMA is aware of, and has followed closely, an Ohio River Main Stem Study performed by the U.S. Army Corps of Engineers over many years of dedicated efforts supported by previous appropriations. The provision of a second 1,200-foot by 110-foot lock chamber at each of the four projects NMA recommends is desirable and warranted in order to accommodate current and projected river traffic adequately, safely, and efficiently. If built, those projects would complete construction of second 1,200-foot by 110-foot lock chambers at all L&D projects from Louisville to the confluence of the Ohio and Mississippi Rivers. That segment of the Lower Ohio River is at the heart of the interconnected Ohio/Tennessee/Mississippi Rivers navigation infrastructure offering interconnected, multi-directional intermodal rail/barge services.

In closing, NMA cites the following statement in the report, An Assessment of the U.S. Marine Transportation System: A Report To Congress, September 1999, submitted by the Secretary of Transportation. NMA participated in the report preparation.

> "By 2000, more than 44 percent of the inland waterway locks and dams will be at least 50 years old. Many are undersized for modern commercial barge tows, which must then be broken up and reassembled at each lock. This lengthens travel times, produces queues at locks—increasing operating costs and decreasing efficiency—and causes safety and environmental concerns. These delays will become more severe as system traffic grows and as aging infrastructure requires increased maintenance and repair time. In 1998, 36 lock chambers on the system averaged delay times greater than 1 hour." (at page 34)

NMA, in presenting this statement on recommendations for approval of fiscal year 2001 appropriations for construction and rehabilitation at selected lock and dam sites, both does so by virtue of a long-standing awareness of the benefits to the Nation attributable to having an exceptionally valuable system of commercially navigable inland waterways, and in recognition of the veracity of the language taken from the September 1999 report to Congress cited above.

ENVIRONMENTAL RESTORATION PROGRAM

NMA's membership has participated in the Acid Drainage Technology Initiative (ADTI) since its inception in 1995 with the goal of developing cost-effective and practical technologies to predict and remediate acid mine drainage from active and inactive coal and metal mines. This initiative is not a regulatory or policy development program. The ADTI is comprised of representatives from the mining industry, Federal and State agencies, universities and consulting firms.

In fiscal year 1999, House Report No. 105–581 acknowledged that acid mine drainage is a serious environmental problem and that the U.S. Army Corps of Engineers possessed the experience and capability to assist in the ADTI's efforts. Further, the subcommittee directed the Corps to participate in this initiative with available funds. Since that time, the Corps' participated in a workshop with members of the ADTI to exchange information on mining and related environmental issues and to explore the nature and extent of the Corps' involvement. In order for the Corps to continue its participation, we respectfully request that the Corps be provided funds to commit $100–200,000 annually (with other Federal agencies involved, such as OSM, BLM, DOE, EPA, and USGS) to further the Corps' goals of ecosystem restoration.

PREPARED STATEMENT OF THE ASSOCIATION FOR THE DEVELOPMENT OF INLAND NAVIGATION IN AMERICA'S OHIO VALLEY

Mr. Chairman and Members of the Subcommittee: I am Barry Palmer, Executive Director of DINAMO, The Association for the Development of Inland Navigation in America's Ohio Valley. DINAMO is a multi-state, membership based association of business and industry, labor, and state government leaders from throughout the Ohio Valley, whose singular purpose is to expedite the modernization of the lock and dam infrastructure on the Ohio River Navigation System. Largely through the leadership of this subcommittee and the professional efforts of the U.S. Army Corps of Engineers, we in the Ohio Valley are beginning to see the results of 19 years of continuous hard work in improving our river infrastructure.

Lock and dam modernization at Robert C. Byrd Locks and Dam, Grays Landing Locks and Dam, Point Marion Locks, and Winfield Locks are largely complete. These projects were authorized for construction in the Water Resources Development Act of 1986. The immediate problems really are focused on completing in a timely manner lock and dam modernization projects authorized by the Congress in subsequent water resources development acts. Substantial problems remain for adequate funding of improvements at the Olmsted Locks and Dams, Ohio River, IL/KY; Lower Monongahela River Locks and Dams 2, 3 & 4, PA; McAlpine Locks and Dam, Ohio River, IN/KY; Marmet Lock, Kanawha River, WV; and for the Kentucky Locks, Tennessee River, KY. The construction schedules for all of these projects have been severely constrained, and we are requesting increased funding for these construction projects at an "efficient construction rate." Following is a listing of the projects and an efficient funding level determined by the U.S. Army Corps of Engineers to advance these projects, in order to complete construction by 2008 or earlier:

RECOMMENDATIONS FOR FISCAL YEAR 2001:

1. For the Robert C. Byrd Locks and Dam modification project, formerly the Gallipolis Locks and Dam on the Ohio River, OH/WV, about $2,700,000 for continued construction.

2. For the Winfield Lock Replacement on the Kanawha River, WV, $300,000 for continued construction of the lock and relocations related to environmental mitigation.

3. For the Olmsted Locks and Dam, replacing Locks and Dams 52 and 53 on the Lower Ohio River, IL/KY, $72,000,000 for continued construction of the twin 110′ × 1,200′ locks and design of the new gated dam.

4. For improvements to Monongahela River Locks and Dams 2,3 & 4, PA, $75,00,000 for continued construction of Dam 2, for relocations related to the construction project, and initiation of construction at Lock 4.

5. For the McAlpine Lock Project on the Ohio River, IN/KY, $20,000,000 to continue design of the new 110′ × 1,200′ lock addition and for continued construction of the new 110′ × 1,200′ lock.

6. For the Marmet Lock Replacement on the Kanawha River, WV, $14,000,000 for real estate acquisition and for continuing Plans and Specifications on the main construction contracts.

7. For the Kentucky Lock Addition on the Tennessee River, KY, $40,000,000 to continue design on the new highway and bridge work and for relocation and construction of the TVA tower.

8. For continuing major rehabilitation of London Locks and Dam, Kanawha River, $5,000,000.

9. For the Ohio River Mainstem Study, including studies related to completing an Interim Feasibility Report for Emsworth, Dashields, and Montgomery Locks and Dams by spring 2002, approximately $10,000,000. This level of funding is needed to complete the work leading to a construction authorization document for additional capacity at these three lock and dam locations in WRDA 2002. See attached ORMSS fact sheet update 3 March 2000.

10. For Pre-Construction Engineering and Design for the John T. Myers Locks and Dam, Ohio River, IN/KY, $2,120,000.

11. For Pre-Construction Engineering and Design for the Greenup Locks and Dam, Ohio River, OH/KY, $$1,300,000.

For the five projects identified in Points 3–7, the fiscal year 2000 Civil Works Budget of the U.S. Army Corps of Engineers allocates only $108,542,000, when the "efficient" construction level for fiscal year 2001 identified by the Corps is $221,000,000. This difference accounts for an additional $112.458 million of construction spending that is needed for these five projects in fiscal year 2001. Attached is a chart outlining fiscal year 1998, fiscal year 1999, and fiscal year 2000 appropriations, fiscal year 2001 budget requests by the Administration, and fiscal year

2001 efficient funding levels for Ohio Valley lock and dam modernization projects. The information related to efficient funding levels was provided to DINAMO by the Commander, Great Lakes and Ohio River Division, U.S. Army Corps of Engineers.

Completion dates for the Lower Mon project have already been delayed 5 years from 2003 to 2008. Failure to win increased funds for this project in fiscal year 2001 will push the completion schedule further into the future. For McAlpine Lock the completion date has been delayed five years from 2002 to 2007. DINAMO has been told that the McAlpine project could be fully operational in 2005 if an efficient funding level for this project could be achieved in fiscal year 2001 and then later years. The current completion date for the Marmet Lock project is 2009, but this project with adequate funding could be completed two years ahead of current schedule and fully operational in 2006. The Kentucky Lock Addition could be constructed by 2008 with "efficient," or "optimum" schedule funding.

These construction projects, in addition to the Olmsted Locks and Dam, should be completed in a timely and orderly manner. It is important to note that taxes are being generated by a 20 cents per gallon diesel fuel tax by towboats operating on America's inland navigation system. These tax revenues are gathering in the Inland Waterways Trust Fund, in order to finance 50 percent of the costs of these project costs. There is about $370 million in the Inland Waterways Trust Fund. The real challenge is not the private sector contribution to completing these lock and dam construction projects in a timely manner, but rather the commitment of the Federal Government to matching its share.

Delaying the construction of these vitally needed infrastructure investments is a terribly inefficient practice. Inefficient construction schedules cost people a lot of money. A recent study by the Institute for Water Resources concluded that $1.02 billion of cumulative benefits (transportation savings) for the aforementioned five lock and dam modernization projects on the Ohio River Navigation System and the Inner Harbor project in New Orleans harbor on the Lower Mississippi River have been lost forever. The benefits foregone represent the cumulative annual loss of transportation cost savings associated with postponing the completion of these projects from their "optimum," or "efficient" schedule. In addition, this study concludes that $682 million of future benefits that will be foregone based on fiscal year 1999 schedules could be recovered if funding is provided to accelerate design and construction activities in accordance with "efficient" schedules.

Expenditures for lock and dam modernization are an investment in the physical infrastructure of this nation. The Corps of Engineers construction budget of $1.38 billion for fiscal year 2001 falls hundreds of millions of dollars less than needed for fiscal year 2001. Mr. Chairman, we have great confidence in the Corps of Engineers and urge your support for a funding level more in line with the real water resources development needs of the nation. For lock and dam modernization on America's inland navigation system, targeted construction funding ought to be at a level of about $250–300 million annually. Last year Congress provided about $4.1 billion for the Corps of Engineers program and about $160 million for lock and dam modernization on America's inland navigation system. It is reasonable that funding for the Corps program should be increased to levels closer to $4.5 billion and about $250 million for lock and dam modernization on our nation's river system. With this kind of increased funding, as amply supported in both the House and Senate appropriations committee report language in previous years, it is clear that a national lock and dam modernization program could be sustained at a level commensurate with the needs for improving the nation's inland navigation system.

We thank you for the opportunity to present this request and our thoughts on these matters.

MISSISSIPPI AND LOUISIANA WATER RESOURCE PROJECTS

PREPARED STATEMENT OF THE UPPER MISSISSIPPI RIVER BASIN ASSOCIATION

[In millions of dollars]

	President's request	UMRBA recommendation
Construction General:		
Upper Mississippi River System Environmental Management Program	18.0	25.0
Major Rehabilitation of Locks and Dams	19.22	19.22
Operation and Maintenance: O&M of the UMR Navigation System	134.896	151.00

[In millions of dollars]

	President's request	UMRBA recommendation
General Investigations:		
Upper Mississippi and Illinois Navigation Study	1.2	1.2
Upper Mississippi River System Flow Frequency Study	.888	.888
Missouri & Middle Mississippi Rivers Enhancement Project	.500	.500
Land Management System (Research & Development)	.250	2.750
	(of 26).	(of

INTRODUCTION

The Upper Mississippi River Basin Association (UMRBA) is the organization created 18 years ago by the Governors of the states of Illinois, Iowa, Minnesota, Missouri, and Wisconsin to serve as a forum for coordinating river-related state programs and policies and for collaborating with federal agencies on regional issues. As such, the UMRBA works closely with the Corps of Engineers on a variety of programs for which the Corps has responsibility. Recent disclosures regarding the U.S. Army Corps of Engineers' "Program Growth Initiative" and allegations specifically related to the Upper Mississippi River Navigation study are serious matters. However, these controversies do not obviate the fundamental need for a wide variety of on-going Corps programs and projects. Of particular interest to the basin states are the following:

ENVIRONMENTAL MANAGEMENT PROGRAM

The 1999 Water Resources Development Act (WRDA) reauthorized the Upper Mississippi River System Environmental Management Program (EMP), which was originally authorized in 1986. What was at first a novel approach to interagency environmental management, has now become a widely recognized and respected regional program.

The EMP consists of two primary components: the construction of individual projects to rehabilitate or enhance critical habitat areas and a long term monitoring program to track the environmental health of the system. The habitat projects, which vary in size and range in cost from about $200,000 to over $10 million, employ different types of techniques, including such measures as island creation, water level control features, side channel closures or openings, and selective dredging to remove sediment. The long term monitoring program uses six field stations throughout the river system that routinely collect standardized data on water, sediment, fish, and vegetation at over 150 sites.

The 1999 WRDA increased the annual authorized appropriations for the EMP from $19.455 million to $33.17 million. Despite this clear indication from Congress and the public that the EMP is an important program, the President's fiscal year 2001 budget request for the EMP is only $18 million, well below even the old authorized funding level. It is very disappointing that the Administration continues to underfund the EMP. In three of the past four years, Congress has needed to increase EMP funding above that requested by the Administration. The states are hopeful that Congress will again affirm its support for this important program by providing $25 million for the EMP in fiscal year 2001. While $25 million is not the full amount of the increased authorization, it represents a funding level that (a) the states are confident the Corps can effectively utilize in fiscal year 2001, (b) will lay the foundation for a fully funded program in the future, and (c) demonstrates the on-going federal commitment to balanced management of this river system as "a nationally significant ecosystem and a nationally significant commercial navigation system." Funding beyond the $18 million requested by the Administration is critical:

—A habitat needs assessment (HNA) is currently being developed, as mandated by the 1999 WRDA. The HNA will help to identify habitat restoration needs at the pool, reach, and system level. It is anticipated that these needs will far exceed the EMP habitat projects currently programmed for construction. Increased funding in fiscal year 2001 will allow a number of projects to proceed to construction and, perhaps even more importantly, initiate planning and design of future projects to meet the needs identified in the HNA.

—The Long Term Resource Monitoring (LTRM) component of the EMP has been significantly constrained as a result of funding shortfalls in the past few years. It is critical that the LTRM be expanded to monitor components such as mussels, birds, and forests; to expand spatial coverage beyond the six key pools that

have been the focus in the past; and to identify cause and effect linkages between physical and ecological processes. These and other unmet data and analysis needs were the reason why the EMP monitoring program was reauthorized in 1999. Now, it is necessary to provide sufficient funding for this important work to proceed.

MAJOR REHABILITATION OF LOCKS AND DAMS

Given that most of the locks and dams on the Upper Mississippi River System are over 60 years old, they are in serious need of repair and rehabilitation. For the past 14 years, the Corps has been undertaking major rehabilitation of individual facilities throughout the system in an effort to extend their useful life. This work is critical to ensuring the system's reliability and safety.

The UMRBA supports the Corps' fiscal year 2001 budget request of approximately $19.22 million for major rehabilitation work at 4 locks and dams on the Upper Mississippi River. Half of this amount is to be provided by the Inland Waterways Trust Fund. The fiscal year 2001 major rehabilitation funds will support continuing work at Locks and Dams 3, 12, and 24, and initiate rehabilitation of Lock and Dam 11. Work at these facilities will include lock rehabilitation, auxiliary lock closure rehabilitation, miter gate installation, electrical and mechanical rehabilitation, scour protection, rehabilitation of embankment systems that are subject to overtopping during flood events, and work on outdraft bendway weirs and wall openings.

OPERATION AND MAINTENANCE (O&M) OF THE UPPER MISSISSIPPI RIVER NAVIGATION SYSTEM

The Corps of Engineers is responsible for operating and maintaining the Upper Mississippi River System for navigation. This includes channel maintenance dredging, placement and repair of channel training structures, water level regulation, and the daily operation of 29 locks and dams on the Mississippi River and 7 locks and dams on the Illinois River. The fiscal year 2001 budget includes nearly $135 million for O&M of this river system, including $97.1 million for the Mississippi River between Minneapolis and the Missouri River, $13.4 million for the Mississippi River between the Missouri River and Ohio River, and $24.4 million for the Illinois Waterway.

These funds are critical to the Corps' ability to maintain a safe and reliable commercial navigation system. The efficiency of this system is vital to the agricultural economy of the five states. In addition, these funds support a variety of activities that ensure the navigation system is maintained while protecting and enhancing the river's environmental values. For example, O&M funds support innovative environmental engineering techniques in the open river reaches such as bendway weirs, chevrons, and notched dikes that maintain the navigation channel in an environmentally sensitive manner. In addition, water level management options for a number of pools in the impounded portion of the river are being evaluated under the O&M program. Pool level management is a promising new approach for enhancing aquatic plant growth and overwintering conditions for fish without adversely affecting navigation.

While the funds that the Corps has requested for fiscal year 2001 are expected to be adequate to meet basic O&M requirements, the UMRBA supports additional funding of $16 million, which could be effectively utilized in fiscal year 2001 for critical needs such as electrical repairs, bulkhead repairs, repairs to cracks and spalls on lockwalls, concrete repairs, repairs to liftgates, revetment and dike repairs, and replacement of roller gate chains at various lock locations on the upper river. Additional funds are also needed to support work related to fish passage at locks.

NAVIGATION STUDY

The UMRBA supports the President's fiscal year 2001 budget request of $1.2 million for the Upper Mississippi River and Illinois Waterway Navigation Study. Recent allegations regarding the study's economic analysis are indeed serious and need to be addressed. However, the feasibility study, which was initiated in 1993, is nearing completion and the funding request for fiscal year 2001 is intended to be used to complete all aspects of the study. In particular, the draft report and draft Environmental Impact Statement have yet to be completed and the public review process, including public meetings, will need to be conducted. It is essential that the Corps has sufficient funds to complete these important tasks and produce a sound economic and environmental assessment of navigation capacity expansion needs.

UPPER MISSISSIPPI RIVER SYSTEM FLOW FREQUENCY STUDY

Flow frequencies for the Upper Mississippi River System badly need revision. The flood profiles currently in use were developed in 1979 by an interagency task force and replaced profiles previously adopted in 1966. However, the accuracy of the 1979 profiles has come into question now that there are over 20 years of new data, including flow records from several high water events like the Great Flood of 1993.

Flood elevation profiles have a variety of important uses including flood insurance; floodplain management; and the study, design, and construction of flood control projects. Thus, the five states of the Upper Mississippi River Basin have been strong supporters of the Corps' efforts to reassess the methodology, update the data, and develop more sophisticated and accurate models.

The UMRBA supports the fiscal year 2001 budget request of $888,000 for the Upper Mississippi River Flow Frequency Study. These funds will be used to complete the hydraulic model which was begun in fiscal year 2000 and to develop the new flood profiles.

MISSOURI AND MIDDLE MANAGEMENT RIVERS ENHANCEMENT PROJECT

Section 514 of the 1999 Water Resources Development Act (WRDA) authorized a new Missouri and Middle Mississippi Rivers Enhancement Project to address the unique habitat needs of specific portions of these two great rivers. The fiscal year 2001 budget request includes $500,000 to develop the plan that, as described in 1999 WRDA, would include activities such as modifying channel training structures and side channels, island creation, creation of riverine habitat, and biological and physical monitoring. The basin states support this funding request and further request that the planning phase of the project be completed at full federal expense given the interstate character of the plan.

LAND MANAGEMENT SYSTEM

The Corps of Engineers' Research and Development (R&D) budget for fiscal year 2001 includes $26 million, $250,000 of which is to be allocated to development of a Land Management System (LMS) demonstration project on the Upper Mississippi River System. Past LMS funding shortfalls have resulted in numerous scheduling set-backs. The UMRBA supports funding for the LMS project, including an additional $2.5 million, that could effectively be utilized in fiscal year 2001.

The Waterways Experiment Station (WES) in Vicksburg, Mississippi is leading the effort, which focuses on three specific locations in the basin: Peoria Lakes on the Illinois River, the Minnesota River (Redwood Basin), and Pool 8 on the Mississippi River. Problems such as wetland loss, poor water quality, and habitat loss are common to all these locations and are related to sediment transport and deposition. Evaluation of the ecological consequences of hydrologic and sediment dynamics at these sites within the Upper Mississippi River System will enhance LMS applications to other large river systems. This current research investment should pay long term dividends, allowing the Corps to design and manage more effective and efficient projects nationwide.

PREPARED STATEMENT OF THE ST. FRANCIS LEVEE DISTRICT BOARD OF DIRECTORS

My name is Bill Felty. I live in West Memphis, Arkansas which is located on the West side of the Mississippi River in the St. Francis River Basin. I am Chief Engineer of the St. Francis Levee District of Arkansas. Our District is the local cooperation organization for the St. Francis Basin Project in Northeast Arkansas.

The St. Francis Basin is comprised of an area of approximately 3,500 square miles in Southeast Missouri and Northeast Arkansas. The basin extends from the foot of Commerce Hills near Cape Girardeau, Missouri to the mouth of the St. Francis River seven miles above Helena, Arkansas a distance of 235 miles. It extends to the West to the uplands of Bloomfield and Crowley's Ridge, having a maximum width of 45 miles.

The St. Francis Basin Project provides essential flood protection to over 2,500 square miles in Northeast Arkansas alone. Within the Arkansas portion of the St. Francis River Basin there is roughly 1,500,000 acres of some of the most fertile farmland in the world. This land has provided food and fiber for the United States and the World for well over 200 years. In the past agriculture has been the primary basis of economy along the Mississippi River. However, resources and infrastructure have allowed Northeast Arkansas to evolve into a prosperous commercial and industrial region as well. This growth and prosperity could not exist without the drainage and flood control efforts made possible by the appropriations from your committee.

As your Subcommittee reviews the Civil Works Budget for fiscal year 2001 Appropriations for the Mississippi River and Tributaries Project, please consider the significance of this project to the Lower Mississippi Valley and to the Nation's security, economy, and infrastructure. The amount of $309,000,000 included in the President's Budget for the overall Mississippi River and Tributaries Project is significantly less than the amount needed to keep this project on schedule. Timely completion of this project is of paramount importance to the citizens of the Lower Mississippi Valley. As each day passes with this project incomplete, the Lower Mississippi Valley is at enormous risk of major flood devastation. Therefore, we support the amount of $370,000,000 requested by the Mississippi Valley Flood Control Association for use in the overall Mississippi River and Tributary Projects. This is the minimum amount that the Executive Committee of the Association feels is necessary to maintain a reasonable time line for completion of the overall Mississippi River and Tributaries Project.

Also, the amounts included in the President's Budget for the St. Francis Basin Project, construction and maintenance are not sufficient to fund proposed projects. The declined amounts that have been appropriated for this project in the past have resulted in a significant backlog of work within the St. Francis Basin. Therefore, our District is requesting $3,795,000 for St. Francis Basin Project construction funds and $12,000,000 for St. Francis Basin Project maintenance funds. This includes an additional capability of $600,000 for construction funds and an additional capability of $6,000,000 for maintenance funds. The amounts requested for the St. Francis Basin Project are a part of the total amount requested for the Mississippi River and Tributary Appropriations of the Civil Works Budget.

I feel the Subcommittee will give fair consideration to the needs of the Mississippi River and Tributaries Appropriations. I appreciate the time given and the work you do to advance the development of the water resources projects.

PREPARED STATEMENT OF THE TENNESSEE-TOMBIGBEE WATERWAY DEVELOPMENT AUTHORITY

Dear Mr. Chairman, we appreciate the opportunity to once again submit to you for your Committee's consideration our requests for appropriations for the Tennessee-Tombigbee Waterway and other waterway related projects for fiscal year 2001. This is the 40th consecutive year the Authority has had this opportunity.

We also want to thank you for the leadership and support you have given to water resources development while serving as Chairman of the Energy and Water Resources Appropriations Subcommittee.

The Tennessee-Tombigbee Waterway continues to have a profound impact on trade and economic development. Some 9 million tons of commerce are shipped each year at great savings in costs to shippers and producers. The waterway's low transportation costs have helped stimulate nearly $4 billion of new and expanded industrial development. These private investments have created more than 50,000 new jobs. Its recreational attractions draw more than 3.5 million visitors each year that generate about $200 million of additional economic spending annually.

Tenn-Tom's ability to continue generating such impressive economic benefits to the nation will depend upon the Federal Government adequately maintaining the waterway and its facilities. Regrettably, this has not been the case for the past 4 years and the waterway's structural integrity has deteriorated because of lack of funds.

TENNESSEE-TOMBIGBEE WATERWAY FUNDING

Current Level.—$21.5 million.
Proposed 2001 Level.—$23.5 million.
Requested 2001 Level.—$25.7 million.

We are very concerned about the growing backlog of needed but unfunded maintenance and repairs for the waterway. Although the Tenn-Tom is a relatively new project compared to others, deferred maintenance has now reached $9 million most all of which have accumulated since 1997.

While the President's budget includes an increase in funding for the waterway for the first time in memory, these funds are earmarked for costs associated with closure of three locks for inspection and major repairs in 2001. This is the first major closure of the Tenn-Tom for repairs since the waterway opened some 15 years ago.

We respectfully request the committee approve $25.7 million for O&M of the Tenn-Tom for next fiscal year. The additional funds of $2.2 million will be used to curtail the deferred maintenance now accumulating on the waterway. These additional funds are needed as follows:

—$1 million for additional dredging to ensure authorized channel depths for commercial traffic.
—$250 thousand for increasing capacity of upland disposal areas for dredged material.
—$300 thousand for emergency repairs at Whitten Lock.
—$650 thousand to fully fund the needs of the conservation agencies in Alabama and Mississippi to adequately manage over 135,000 acres of federal lands as part of the Tenn-Tom Wildlife Mitigation Project. The States assumed the management of these lands on the assumption that adequate funds would be provided. This has not been the case.

The availability of these funds will stop the physical deterioration of the waterway caused by underfunding since 1997 and allow the project to generate its expected benefits. It would be penny wise and pound foolish not to do so.

KENTUCKY LOCK

Current Level.—$24.2 million.
Proposed 2001 Level.—$15.0 million.
Recommended 2001 Level.—$40.0 million.

One of the worst bottlenecks on the nation's entire waterway system is the antiquated and out-moded lock at Kentucky Dam on the Tennessee River. Congress appropriated funds last year to start construction of a new 1200-foot lock. The President's recommendations for this project in 2001 are woefully inadequate and, if approved, will delay completion of the project by at least one year.

If the new lock is not completed by 2008, shippers and the nation will incur as much as $250 million in losses when the old lock is closed for a total of 8 months for extensive repairs beginning in 2009. The request of $40 million is needed to keep construction on its current schedule of completion by 2008 and preclude these losses.

CHICKAMAUGA LOCK

We support the President's request of $1.9 million to the Corps of Engineers to continue repairs to this 60 year-old lock. These repairs will help stem the structural deterioration of this project and permit the lock to remain in operation until the Congress has the opportunity to make a decision on its replacement. The study to determine the economic feasibility of building a new lock at Chickamauga Dam is expected to be completed in the fall of 2000.

WARRIOR-TOMBIGBEE WATERWAY

The Authority supports the Warrior-Tombigbee Waterway Association and its request for $20.275 million that will adequately fund the operation and maintenance of this waterway in 2001. The reliability of the Tenn-Tom as a viable shipping artery is dependent on the navigability of the connecting Warrior-Tombigbee system, especially its southern 215-mile reach.

Thank you again for your careful consideration of our request for the continued funding of these most important projects.

PREPARED STATEMENT OF THE WARRIOR & GULF NAVIGATION COMPANY

I am J. Craig Stepan, General Manager of Warrior & Gulf Navigation Company. Our company is an active member of the Warrior-Tombigbee Waterway Association. I wish to take this opportunity to highlight the impact that the Black Warrior-Tombigbee Waterway and the Port of Mobile have on the success and development of our Company and to solicit your support on behalf of several critical waterway issues.

Warrior & Gulf is a barge line and terminal operator headquartered in Chickasaw, Alabama, and owns 20 towboats and 240 barges, moving approximately 8 million tons of bulk materials on the Black Warrior-Tombigbee River System. This makes WGN the dominant water carrier operating in the region. Additionally, we own and operate two bulk and general cargo terminals at Port Birmingham and Mobile, Alabama, providing storage, transloading and intermodal services for truck, rail and water transportation. Our total employment is 235 people.

Warrior & Gulf has provided barge transportation on the Black Warrior-Tombigbee River Systems since 1940 for export and domestic coal, iron ore, coke, import and export steel products, export and domestic wood chips, and several other types of bulk commodities. An efficient and properly maintained waterway system integrated with the Port of Mobile is vital to Warrior & Gulf and its customers. This waterway system has made the entire region world competitors through the reliable,

efficient movement of raw materials and finished products both for domestic and overseas consumption. In order to encourage continued economic development along this great waterway we must continue in our efforts to ensure this viable low cost transportation alternative remains in place. The continued efficiency of this waterway is extremely critical to the viability of the industries it serves and helps to develop. This waterway system and harbor hold great opportunity for developing trade initiatives with Mexico, South America and the world.

We have worked closely with the Corps of Engineers and wholeheartedly endorse the President's budget request of $19,204,000 in O&M funds for the Black Warrior-Tombigbee system for fiscal year 2001 to ensure continued transportation operations. In addition, we support an add-on request of $1.0 million to fund an engineered solution to the critical Bankhead Lock lower gate problem.

Lastly, it goes without saying that the maintenance of the Mobile harbor is vital to our waterway and the entire southern region. We, therefore, support the appropriation of $21,165,000 to adequately fund Mobile harbor's O&M needs.

Our company and its employees respectfully request your continued support of funding for these very important issues concerning the Black Warrior-Tomibigbee System, the Port of Mobile and those they serve.

LETTER FROM ANTHONY J. TOPAZI

SOUTHERN COMPANY,
Birmingham, AL, March 14, 2000.

Hon. PETE V. DOMENCI,
Chairman, Subcommittee on Energy and Water Development,
U.S. Senate, Washington, DC.

Dear SENATOR DOMENICI: On behalf of Southern Company and it subsidiaries, Alabama Power Company, Gulf Power Company, and Mississippi Power Company, I am writing to express our support for the Warrior-Tombigbee Development Association in their efforts before your committee. Because of the importance of the Warrior-Tombigbee Waterway to local, national, and international trade, the Southern Company joins with the Warrior-Tombigbee Development Association in an effort to improve the efficiency and reliability of the Warrior-Tombigbee Waterway.

Alabama Power Company, Gulf Power Company and Mississippi Power Company have used the Warrior-Tombigbee and the facilities in the Port of Mobile to transport coal to their respective electrical generating plants at Demopolis, Alabama; West Jefferson, Alabama; Mobile, Alabama; Pensacola, Florida; Sneads, Florida and Biloxi, Mississippi. In 2000, we project to move over 8.5 million tons, through the use of contracted barge carriers, by way of the Warrior-Tombigbee Waterway. The Warrior-Tombigbee Waterway allows the barges to move up and down the Warrior-Tombigbee River from in-state and out-of-state coal suppliers to our generating plants. The significant importance of this capability to our system is obvious from a transportation flexibility standpoint. Additionally, the Port of Mobile is the hub of the Central Gulf Coast and has become a major focus of our coal movement plans. The continued development of its facilities and support services is critical to the economy of the tri-state area served by the Southern Company.

Alabama Power Company, Gulf Power Company and Mississippi Power Company utilize water transportation because of the economic advantage to two million customers. Any expenditures for maintenance or upgrading which improve the efficiency and reliability of the waterway will have a positive impact on our customers. At the same time, higher cost resulting from inefficiency or the unreliability of the Warrior-Tombigbee Waterway will have a direct and adverse effect upon our customers.

Adequate funding of programs required to maintain the efficiency and reliability of our nation's waterways and associated infrastructure is critical to its superior economic health and welfare. I strongly urge and solicit your support.

Sincerely,

ANTHONY TOPAZI,
Vice President.

PREPARED STATEMENT OF THE ALABAMA ELECTRIC COOPERATIVE, INC.

BACKGROUND INFORMATION

Alabama Electric Cooperative, Inc. (AEC) is a wholesale power supplier for 21 member-owners located in central and south Alabama and northwest Florida. The

member-owners serve over 330,000 customer-members. AEC operates the Charles R. Lowman Power Plant, located at Milepost 89.5 on the Tombigbee River, a coal-fired power plant which burned 1,512,658 tons of coal in 1999. Also, AEC has a site on the Black Warrior-Tombigbee River which is a possible location for a future base-load fossil fired generating plant.

STATEMENT OF INTEREST AND SUPPORT

AEC joins the collective effort to improve the efficiency and reliability of the Warrior-Tombigbee Waterway because of the lower fuel transportation costs which the waterway provides to AEC's Lowman electric generating plant. The Black Warrior-Tombigbee Waterway (BWT), the Tenn-Tom Waterway, and the Port of Mobile are vital to our delivery of coal economically and efficiently to this plant, which is located on the Tombigbee River near Jackson, Alabama. During calendar year 1999, we received 363,199 tons of coal via the BWT which accounts for over 23 percent of total coal received.

Because delivered coal cost is such an important factor in our ability to maintain competitive rates to our member systems, AEC supports the Black Warrior-Tombigbee project and level funding for the Corps of Engineers' fiscal year 2001 budget. In addition, AEC supports the additional request of $1,000,000 urgently needed for work on the Bankhead Lock.

In addition to the dependency which AEC has upon the BWT, there are benefits to our region and our end-consumers as a direct result of a viable BWT waterway and the Port of Mobile. These systems provide an invaluable link between our region and the world markets. As such, they stimulate the region's economy, provide jobs, and help reduce the trade deficit.

SPECIFIC BENEFITS OF THE WARRIOR-TOMBIGBEE WATERWAY AND THE PORT OF MOBILE TO AEC

The amount of coal moved to AEC's Plant Lowman by barge on the BWT for the past five years is as follows:

Year	*Tons*
1995	874,044
1996	1,103,919
1997	1,052,575
1998	938,483
1999	363,199
Total	4,332,220

The savings in transportation costs represented by the above tonnage exceeds $25 million compared to AEC's next viable option of delivery via rail.

AEC plans to continue to move its barge coal via the BWT in 2000 and beyond. AEC has recently entered into a six-year contract for supply of imported coal into the Port of Mobile. This coal will supply Lowman Plant with up to 50 percent of its total coal by barge.

STATEMENT WITH REGARD TO APPROPRIATION AMOUNTS

AEC supports the President's request for funding ($19,204,00) for Operation and Maintenance in the Corps of Engineers' fiscal year 2001 Budget. We view this as a minimum requirement in that this level of O&M funding is necessary to cover the minimum expected needs within the Mobile District for fiscal year 2001.

AEC also supports the appropriation of adequate O&M funds of $21,165,000 for Mobile Harbor.

Lastly, AEC supports an amount of $1,000,000 for engineering and designs for the lower gates on the Bankhead Lock. The status of this project has been identified as urgent, and is nearing the emergency state.

CONCLUSION

We appreciate the opportunity to submit a statement on behalf of our member owners in central and south Alabama and northwest Florida pertaining to the benefits of the BWT waterway and the Port of Mobile. AEC and its member-owners fully support the Corps of Engineers' 2001 budget request for $19.2 million in operations and maintenance funds for the BWT waterway, as well as $1 million for urgent work on the Bankhead Lock, and $21.2 million for Mobile Harbor O&M. While we are well aware of budget constraints, we believe these projects should be funded at these levels to assure a viable transportation system. With the money that has al-

ready been spent in construction of the BWT transportation system, proper funding for operations and maintenance is, in our view, prudent management of what is undoubtedly a national asset.

PREPARED STATEMENT OF STEVEDORING SERVICES OF AMERICA

Our company, Stevedoring Services of America (SSA), is a 55 year-old stevedoring and marine terminal operating company that utilizes the Warrior-Tombigbee Waterway and the Port of Mobile, Alabama, in our daily operations. We handle approximate annual tonnage, via the Tombigbee Waterway and Port of Mobile as follows: 1.7 million tons of forest products, 1.5 million tons of bulk cargo (coal) through Mobile and 270,000 tons of bulk and breakbulk products through the Port of Columbus, MS. This business results in direct employment of fifty people and an additional 300,000 man hours per year for four local International Longshoremen Association unions generating an annual total of over $12.5 million in wages and benefits.

SSA supports the President's fiscal year 2001 budget request of $19,204,000 for the operation and maintenance of the Black Warrior-Tombigbee Waterway by the Corps of Engineers. We also request you provide an add-on request for the urgent need of $1,000,000 for engineering and designs of the lower gates on the Bankhead Lock. Additionally, maintaining the Mobile Harbor is critical to SSA's business, and the Alabama State Docks. Therefore, we urge your support for appropriation of $21,165,000 for maintaining and improving the Mobile Harbor.

SSA fully supports the collective effort to improve the efficiency and reliability of the Warrior-Tombigbee Waterway (BWT). The waterway is a vital national transportation artery providing access to low cost, energy efficient, environmentally safe barge transportation. Moreover it is critical to SSA's business, to maintaining international commerce at the Port of Mobile and growing our local, state and national economy. Maintaining and improving the efficiency and reliability of the waterway is essential to protect and grow SSA's business.

We strongly urge you to support the aforementioned budget request. The BWT is an important segment of our national transportation infrastructure. After all, our nation's transportation infrastructure is what keeps America moving and competitive in the global economy.

We very respectfully appreciate your consideration of this matter.

PREPARED STATEMENT OF THE VELASCO DRAINAGE DISTRICT

Mr. Chairman and members of the committee: As Chairman of the Board of Supervisors of the Velasco Drainage District (VDD) in Southern Brazoria County, Texas, I would like to testify in support of the fiscal year 2001 budget request the Corps of Engineers (COE), Galveston District has made for a New Start Reconnaissance Study of the Freeport Hurricane Levee System. This request was made as subsequent to a request from VDD for a review of the Freeport Hurricane Levee Project under Section 216 of the 1970 Flood Control Act.

BACKGROUND

The Brazosport area is protected by a Hurricane Levee System that protects approximately 236 square miles from hurricane damage of industrial and residential property and loss of life.

When the COE completed the latest upgrade of the project in mid-1970's, the VDD assumed the operational and maintenance responsibility of the System. It includes 53 miles of levees, 66 miles of major outfall ditches, 13 pump stations with a pumping capacity of 3.4 million gpm, and assets of invested taxpayers funds of approximately $60 million. The levee system was studied in 1957 and 1966, which resulted in a major upgrading of the levee system in the early 1970's including several miles of extension and elevation increases along the entire levee system.

In 1998, as a part of an internal risk management review, a large local chemical company commissioned an independent study of the existing levee system to evaluate the probability and potential property and business loss of various size hurricanes hitting the Texas Gulf Coast at or in the near vicinity of Freeport, TX. The study results indicated that a large Category 3 or Category 4 storm would likely over top the existing levee system, causing significant flooding and property damage to both residential and industrial property.

WHAT IS REQUESTED

The people and businesses living within the hurricane protection levee crucially need to know whether the levee is adequate. Therefore, VDD urges the committee to include $100,000 for a New Start Reconnaissance Study as requested by the COE in the fiscal year 2001 appropriations.

WHAT IS AT RISK

Lives.—Close to 50,000 residents rely on the levee to protect their lives, homes and property.

Property.—In addition, the area inside the levee is heavily developed, with over $4.8 billion of buildings and other improvements, according to our tax rolls. This does not include the value of or operation interruption of the Strategic Petroleum Reserve facility at Bryan Mound.

Income.—The area within the levee is highly industrialized. If a storm surge overtopped the levee, the business interruption losses would be catastrophic, and the effects could be felt nationwide.

Environment.—Still further, the levee protects numerous large chemical plants. Therefore, an inadequacy of the levee height could well result in an environmental disaster, in addition to loss of lives, property and revenues.

WHY A NEW STUDY IS NECESSARY

The existing levee was designed almost a half a century ago, in 1957, and the design has not been reviewed since 1966, roughly 34 years ago. Obviously, conditions have changed dramatically in that time, as follows:

—The quantity of lives, chemical plants, and other property developments now depending on the levee is several orders of magnitude greater than when the levee was designed in the 1950's.

—Modern computer modeling technology for hurricanes makes the 1957 technology seem primitive. Yet the people, property, and environment of southern Brazoria County are still depending on a levee with 1958 knowledge and technology. There now is 40 more years of actual hurricane data compiled that could be used with vastly improved modeling technology.

—The economic value of existing properties within the levee has also risen significantly over the decades.

—The damage that a storm surge overtopping the levees might inflict on the coastal environment has expanded apace with the profusion of chemical plants within the levee.

—The number of lives and property now at risk justify a greater public investment than quantities in 1957.

—Development has reduced the floodwater storage (ponding) areas in this vicinity since the 1957 study.

—The VDD has added significant pumping capacity relative to the recommended capacity in the 1958 study.

—Subsidence in the coastal plain may well have increased since 1957, especially considering the increase in groundwater use over the years as industrial and residential development have multiplied.

—The Bryan Mound Strategic Oil Storage facility is now protected by the levee system.

HISTORY OF THE REQUEST

In October 1998, based on the risk analysis study conducted by local industry and after several meetings and discussions with local industry, community leaders and the COE, the VDD requested a review of the Freeport Hurricane Levee Project under Section 216 of the 1970 Flood Control Act

Based on that request the COE began an Initial Appraisal (IA) of the Freeport Levee project in January 1999. The completed IA assessed the current conditions of the levee system to determine if there was a need for further studies. These studies evaluated the need and justification for additional construction to avoid future hurricane damages to life and property. The IA indicated that the project might potentially not function as intended. Therefore, the COE proposed to initiate a full study and prepared to budget for a New Start Reconnaissance Study in fiscal year 2001. This would require funding of $100,000 for the New Start Reconnaissance Study. The COE did submit their request in their fiscal year 2001 budget submittal. That request for a New Start has been deleted from the Administration/OMB budget submitted to Congress on February 7.

The VDD, local industry and community leaders were of the opinion that the need was more urgent and made an unsuccessful effort to have the New Start study added as a line item in the COE fiscal year 2000 budget. The VDD has offered to fund the New Start Study; however, there is no mechanism in place to allow an outside entity to fund a COE New Start Study. Reprogramming was considered as an alternate to expedite the study; however, reprogramming is not allowed on a New Start Study.

Due to the potentially large liability of hurricane damage and loss of life, the VDD urges the committee not allow the small size ($100,000) of the funding request to negatively impact the real need for the study.

CONCLUSION

Therefore, with a great deal of concern and urgency on the part of the VDD, local industry and community leaders we ask that the committee include the funding for the New Start Reconnaissance Study per the COE's request in their fiscal year 2001 appropriations.

LETTER FROM J. MARK COOK

R&W MARINE, INC.,
Paducah, KY, February 24, 2000.

Hon. RON PACKARD,
Chairman, Subcommittee on Appropriations for Energy and Water Development, U.S. House of Representative, Washington, DC.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Appropriations for Energy and Water Development, U.S. Senate, Washington, DC.

Dear CONGRESSMAN PACKARD AND SENATOR DOMENICI: I am writing to express my support for the continued maintenance and improvement of the Black Warrior-Tombigbee Waterway system.

R&W Marine, Inc. is one of the largest tramp towing companies in the inland river system. This means that R&W Marine, Inc., is engaged in the business of towing barges for many companies, as it does not own any barges itself. A significant number of our customers require service to and from both the Black Warrior-Tombigbee Waterway system and the Port of Mobile. The tonnages flowing through these waters are significant to the economies of the states in that region, from the points of view of both producers and consumers. Barging is a very low cost method of transportation, responsible for moving more than 15 percent of all of the United States total freight for less than 2 percent of the nation's total transportation costs, which translates into savings for the consumer, such as lower rates for electricity.

Another important aspect of the Black Warrior-Tombigbee Waterway system is that it provides the only alternative to the Mississippi River to move product to the Gulf Coast. This was extremely important during the drought year of 1988 when the lower portion of the Ohio River was closed for an extended period and the lower Mississippi River was severely restricted for approximately five months. The availability of the Black Warrior-Tombigbee Waterway system allowed us to continue to serve utility and industrial customers and kept those customers from having to shut down operations because they could not receive raw material.

R&W Marine, Inc., fully supports and recommends appropriation of $21.1 million for Mobile Harbor in fiscal year 2001. In addition, we support the appropriation of $19.2 million for operation and maintenance of the Black Warrior-Tombigbee Waterway system for fiscal year 2001. Finally, we recommend additional funding to permit the Corps of Engineers to proceed with engineering and design of the lower gates on Bankhead Lock, which totals $1,000,000. All of these funds are necessary to assure that the Port of Mobile and the Black Warrior-Tombigbee Waterway remain important parts of the inland waterways system. The Port of Mobile is an integral part of the waterway system, especially as an alternative origin to the Port of New Orleans. Improvement of the Mobile Harbor will increase utilization of the Black Warrior-Tombigbee Waterway overall and generate significant additional monies for the states in this region. We request your support in reviewing and approving these project-funding limits for fiscal year 2001.

Sincerely,

J. MARK COOK,
President.

LETTER FROM ROBERT L. DOETTING,

RED CIRCLE TRANSPORT CO.,
Cincinnati, OH, February 24, 2000.

Hon. RON PACKARD,
Chairman, Subcommittee on Appropriations for Energy and Water Development, U.S. House of Representative, Washington, DC.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Appropriations for Energy and Water Development, U.S. Senate, Washington, DC.

Dear CONGRESSMAN PACKARD AND SENATOR DOMENICI: I am writing to express my support for the continued maintenance and improvement of the Port of Mobile.

Red Circle Transport Co., is a subsidiary of one of the nation's largest barge transportation companies and provides service to Puerto Rico. The Port of Mobile is a port of call for ConAgra, one of Red Circle's major customers. Products from Mobile are transported to San Juan, Puerto Rico, enhancing the economic viability of both locations. In addition, products from Mobile help sustain the viability of Puerto Rico, an island nation dependent upon cost effective, reliable water transportation service. Barging is a very low cost method of transportation, responsible for moving more than 15 percent of all of the United States total freight for less than 2 percent of the nation's total transportation costs, which translates into savings for the consumer, such as lower rates for food products and electricity.

Red Circle Transport Co., fully supports and recommends appropriation of $21.1 million for Mobile Harbor in fiscal year 2001. In addition, we support the appropriation of $19.2 million for operation and maintenance of the Black Warrior-Tombigbee Waterway system for fiscal year 2001. Finally, we recommend additional funding to permit the Corps of Engineers to proceed with engineering and design of the lower gates on Bankhead Lock, which totals $1,000,000. All of these funds are necessary to assure that the Port of Mobile and the Black Warrior-Tombigbee Waterway system remain important parts of the inland waterways system.

We request your support in reviewing and approving these project-funding limits for fiscal year 2001. Continued support for improvement of Mobile Bay and the water systems that support commerce at Mobile will result in a significant economic benefit to the United States and the Caribbean Region.

Sincerely,

ROBERT L. DOETTING,
Senior Vice President, Transportation.

LETTER FROM JERRY L. STEWART

SOUTHERN COMPANY,
Birmingham, AL, February 22, 2000.

Hon. PETE V. DOMENICI,
Chairman, Subcommittee on Energy and Water Development, U.S. Senate, Washington, DC.

Dear CONGRESSMAN DOMENICI: On behalf of Alabama Power Company, I am writing to express our support for the Warrior-Tombigbee Development Association and its president in their efforts before your Committee. Because of the importance of the Warrior-Tombigbee Waterway to local, national and international trade, Alabama Power Company joins with the Warrior-Tombigbee Development Association in an effort to improve the efficiency and reliability of the Warrior-Tombigbee Waterway.

Alabama Power Company has used the Warrior-Tombigbee to transport coal to its electrical generating plants at Demopolis, Alabama; West Jefferson, Alabama; and Mobile, Alabama. Also, a barge unloader was constructed in 1999 at Plant Gorgas located near Parrish. During 2000, a majority of the coal for Plant Gorgas will be delivered by barge. In 1999, through the use of contracted barge carriers, Alabama Power Company moved over 5.8 million tons of coal by way of the Warrior-Tombigbee Waterway. Barge movements to Alabama Power Company plants are projected to increase to 9.5 million tons in 2000. The Warrior-Tombigbee Waterway allows the barges to move down the Warrior-Tombigbee River to Mobile and other destinations. The significant importance of this capability to our system is obvious from a transportation flexibility standpoint. Additionally, the Port of Mobile is the hub of the Central Gulf Coast and the continued development of its facilities and support services is critical to the economy of the tri-state area served by the South-

ern electric system. During 2000, Alabama Power Company is projected to import over 3.5 million tons through the Port of Mobile.

Alabama Power Company utilizes water transportation because of the economic advantage to our 1.3 million customers. Any expenditures for maintenance or upgrading which improves the efficiency and reliability of the waterway will have a positive impact on our customers. At the same time, higher cost resulting from inefficiency or the unreliability of the Warrior-Tombigbee Waterway will have a direct and adverse effect upon our customers.

It is imperative that there be a continuous program for maintenance and upgrading of the Warrior-Tombigbee Waterway channels and locks. Alabama Power Company supports the proposed budget request for $19.2 million in Operations and Maintenance funds for the Black Warrior-Tombigbee River for the fiscal year 2001. Additionally, we support an urgent add-on request of $1.0 million for engineering and design of the lower gates on the Bankhead Lock, as well as the appropriation of funds for Mobile Harbor in the amount of $21.2 million.

Adequate funding of programs required to maintain the efficiency and reliability of our nation's waterways is critical to its superior economic health and welfare. I strongly urge and solicit your support.

Sincerely,

JERRY L. STEWART,
Senior Vice President.

PREPARED STATEMENT OF THE HUNT COMPANY

The Warrior-Tombigbee Waterway System and the Port of Mobile are critical to the operation of our Refinery in Tuscaloosa, Alabama. We barge over 40 percent of our crude oil and over 25 percent of our refined products using both the Port of Mobile and the WTWA system. We use the Port of Mobile as a starting point to pipeline or barge foreign and domestic crude north at the rate of approximately 12 million barrels per year.

Hunt Refining Company presently employs over 250 residents of West Alabama and has been an important participant in the local economy since 1946. An inability to run our Refinery efficiently and at maximum capacity will have a long-term impact on employment at Hunt Refining Company and ultimately, the surrounding counties.

Hunt Refining Company supports the Warrior-Tombigbee project and joins the collective effort to improve the efficiency and reliability of the WTWA system. We are currently limited by draft restrictions most of the year, high river the other part of the year, and to a special combination of two-barge tows all year. Through improvements, we hope to save a minimum of $0.15 per barrel additional transportation costs we incur during periods when the river is above flood stage or at very low levels. Naturally, the more barrels we are able to haul on each two-barge tow, the lower our cost per barrel. At the present time we are limited as to how many barrels we can haul north at one time. Our concern long term is to have more flexibility as to the types of tows we can hire and the number of barrels we can load per tow. Increased navigability of the waterway, increases our transporter choice, ultimately keeping costs competitive.

Two rivers merge at Demopolis Lock (MM213.4). Our dock at Womack Hill (MM126.1), which is south of Demopolis Lock and north of Coffeeville Lock (MM116.6), is inaccessible for numerous days during high river season. We have the same problem at our dock in Tuscaloosa (MM337.0) due to the pressure put on the Black Warrior River by Bankhead Lock (MM365.5) and the backing up of water from Demopolis Lock.

The Corps of Engineer's Budget request for the BWT Operations and Maintenance is $19.2 million. We believe the BWT needs at least this level of funding to cover the expected needs of the system. The Corps also has two projects identified to improve the efficiency of the system. These are the engineering and design of modifications to the Bankhead Lock and replacement of the CSX Railroad Bridge. Both of these projects would improve the efficiency of the waterway at a cost of $2 million for both. We are asking for your support for a total of $21.2 million for the waterway system.

We further support the funds needed for the Mobile Harbor in the amount of $21.2 million.

PREPARED STATEMENT OF DAVID VOLKERT & ASSOCIATES, INC.

Volkert & Associates, Inc. (Volkert) is an engineering/architectural/design firm which employs 500 people and maintains Alabama offices in Mobile, Birmingham, and Gulf Shores. Volkert strongly supports funding for the Warrior-Tombigbee Waterway and the Port of Mobile for fiscal year 2001.

We believe the President's budget request of $19,204,000 for Operations and Maintenance of the Black Warrior-Tombigbee Waterway, as submitted by the Corps of Engineers, is justified since this amount is necessary to cover the known and reasonably expected needs for fiscal year 2001, support the day-to-day O&M program, and continue on-going channel improvement projects. We also support appropriating $1,000,000 for engineering and designs, etc. of the lower gates on the Bankhead Lock. We understand this need has reached an emergency status. This funding is needed to bring the waterway efficiency to the expected level.

Since the City of Mobile's largest industry is her Port and the City's present economy and future progress depend upon her Port, Volkert also supports $21,165,000 for funding of necessary improvements for the Mobile Harbor. This will insure the Harbor's continued viability.

Confidence in the Waterway and its efficiency and modernization of its facilities are important in bringing much needed new industry to Mobile and to the State of Alabama. Lower operating costs to users of the Waterway and Port of Mobile are essential in obtaining a reasonable balance of the international export market allowing the U.S. to continue to reduce our trade deficit. Increases in shipping and commerce result in opportunities for many companies, similar to Volkert, to obtain business and offer meaningful employment to citizens of the State of Alabama and other parts of the U.S.

Volkert appreciates this opportunity to express our support of Chairman Charles A. Haun and President Sheldon L. Morgan, of the Warrior-Tombigbee Waterway Association, and the testimony to be given by them before the Appropriations Committee of the Senate and House. We are proud to join in the collective effort to improve the efficiency and reliability of the Warrior-Tombigbee Waterway and the Port of Mobile.

PREPARED STATEMENT OF NAVIOS SHIP AGENCIES INC.

We request that you support the U. S. Army Corps of Engineers' Operations and Maintenance Budget request for the Black Warrior-Tombigbee Waterway of $19,204,000. We further support an add-on request for $1,000,000 for engineering and designs of the Bankhead Lock. The Bankhead Lock is an extremely urgent request and has a potential critical status. Thus, we request your support on this additional add-on of $1,000,000. We also support the Mobile Harbor request of $21,165,000.

Our vessels and our principal's vessels carry 3.8 million tons of iron ore and 1.9 million tons of furnace coke per year with the majority bound for industries in the State of Alabama. The Port's ability to maintain its present draft has enabled us to remain competitive on the world market. The continued dredging of the Warrior-Tombigbee allows this cargo to go through the waterway system of the Tombigbee. The U.S. Army Corps of Engineers has done an outstanding job maintaining this system.

A large portion of this cargo is for steel operating in the Birmingham, Alabama area. These import raw materials enable the steel mills to supply steel for various supplies to this nation. Some of these cargo products from the steel mills are re-exported through the Port of Mobile, which helps to reduce our trade imbalance. The efficiency and reliability of waterways commerce is essential for us to provide the raw materials necessary for our principals to meet the demands of the various markets within the State of Alabama and the United States.

We have been in operation since 1957 utilizing the Port of Mobile, the Warrior-Tombigbee and the Black River systems. We realize the importance of tight budget control, yet the benefits on industry, commerce and trade, as well as job return, must be recognized. Therefore, we solicit your support. We join in the collective efforts of all those affiliated companies who realize the importance of maintaining this waterway system so that we may continue to bring in the necessary raw materials for our manufacturing industries within the State of Alabama. For these reasons, we request you to support the programs for fiscal year 2001.

PREPARED STATEMENT OF THE WARRIOR-TOMBIGBEE WATERWAY ASSOCIATION

The Warrior-Tombigbee Waterway Association represents a broad cross-section of shippers, carriers, and the general business community in the Warrior-Tombigbee basin in Alabama, and users in nine southern states. The Association began in 1950 to work with Alabama's Congressional Delegation and the Army Corps of Engineers to plan for modernization of the waterway. The Warrior-Tombigbee Waterway now has modern and standard sized locks throughout its length. These six new locks replaced the seventeen old, turn-of-the-century locks, and today, this system represents a most noteworthy example of the positive impact of the Federal water resource development program. The most persuasive evidence of the validity of this project and the wisdom of those who made it possible comes from the record compiled during and following the investment in its redevelopment. During the economic studies which justified these investments, it was projected that by 1980, the Waterway would carry some eight million tons annually, producing a positive benefit to cost ratio. These levels were reached in 1966 and, by 1980, twice the projected tonnage was being moved. Traffic has since reached 25 million tons annually, a level three times that which had been projected. Clearly this has been a valid investment in infrastructure.

This Waterway must continue to be efficient and reliable if its users are to remain competitive in world markets. Shipments of ore, steel, and related products have increased because of the new and modern facilities in Birmingham, and a new steel mill at Tuscaloosa and Mobile.

Coal comes out of Kentucky and Colombia to electric generating plants on the Warrior-Tombigbee. The Colombian Coal is transhipped at the Port of Mobile. Also, there are new facilities at the Port of Mobile, which handle more forest products than the total handled by all other Gulf Coast ports. The efficiency and reliability of the waterway are key factors in the development and competitiveness of these facilities, upon which thousands of jobs depend.

These are some examples of how this waterway is so central to the economy of this entire region, impacting both domestic and international markets. You will be receiving letters from our users further highlighting this importance. These represent a broad cross-section of the economic heartbeat of an entire region. In these statements you will find repeated references to the importance of confidence in the waterway to the willingness of business and industry to continue to invest in the region. Shippers depend on the reliability for the movement of their products. There are wide ranges of interests represented by our Association members: financial institutions; public utilities; port facilities; coal mining; manufacturers; suppliers; marine interests; petroleum and chemical processors and general business.

We support the President's recommendation for O&M funds of $19,204,000 and ask for add-ons of $1,000,000 for additional capability be provided for the Warrior-Tombigbee Waterway for engineering and design for new lock gates at Bankhead Lock and Dam. With the Committees' help, we have been able to complete several deferred projects following several years of postponements. These projects address long-standing problems and have required extensive research and coordination and reflect excellent teamwork by the Corps and the industry. But for the support of this committee, they would not have been reality. We wish to emphasize that this level of funding is the minimum essential level.

Mr. Chairman, we look forward to working with you and are extremely pleased that our own Congressman Callahan is a member of your Committee. As he knows, industry and the Corps of Engineers in the Mobile District have developed a true partnership and enjoy the finest of professional and mutually supportive relationships. From this have come both short and long range programs which have provided a basis for orderly progress toward keeping the Waterway efficient and reliable. The funding requirements to which I have referred stem from work we need to continue now under these programs. I respectfully repeat that the performance of this waterway in successfully handling a level of tonnage some three times the projections made during its design, attest to foresight of this Committee.

To summarize, the Warrior-Tombigbee Waterway Association request for Operations & Maintenance funding in fiscal year 2001 for the Black Warrior-Tombigbee Waterway in the amount of $19,204,000 and $521,000 for General Investigation. This is level funding for the normal O&M work, and is the minimum to keep navigation capability at a nominal level. However, additional capability of the Corps is important to the continuing improvements for safety and efficiency. They include replacement of gates at Bankhead Lock and Dam totaling $1,000,000 for engineering and design. Our total request is for a total of $20,725,000 for fiscal year 2001.

SUMMARY

The following is a summary of the funding items for the U. S. Army Corps of Engineers for fiscal year 2001 to meet the needs of the Warrior-Tombigbee Waterway, and which we ask the Committee to approve:

Warrior-Tombigbee Waterway:	
Operations & Maintenance Funds for Corps' Budget fiscal year 2001 (President's request)	$19,204,000
Funds for Additional Capability not included in Corps' O&M Budget Request [1]	1,000,000
For General Investigations (Long Range Study)	521,000
Total funds required	20,725,000
Other needs allied to the Warrior-Tombigbee are:	
Mobile Harbor:	
Operations & Maintenance Funds, for Corps' Budget fiscal year 2001 [1]	21,165,000
Construction	499,000
Total funds required	21,664,000

[1] Funds for Additional Capability items are not included in the Corps' Budget request, so it is not likely that the committee has been informed of the need of funding for this particular Additional Capability. We are requesting the additional funds for replacement of gates at Bankhead Lock (near an emergency status), upland disposal sites recycling (these substantially reduce annual dredging costs) and rock removal.

PREPARED STATEMENT OF THE ALABAMA STATE DOCKS

Enclosed is a statement of requirements for operation and maintenance funding for the Mobile Harbor and Ship Channel Federal Project for fiscal year 2001 in the amount of $21,165,000. In addition, the Alabama State Docks also supports fully funding the operations and maintenance budgets designated for the six inland waterways internal to or transiting the State of Alabama. We respectfully request that these requirements be made a part of the record of your committee and be appropriated for funding of the U.S. Army Corps of Engineers' budget for fiscal year 2001.

STATEMENT OF REQUIREMENTS—MOBILE (AL) HARBOR FEDERAL PROJECT

The purpose of this statement is to identify the requirements for the Port of Mobile (POM) in conjunction with the fiscal year 2001 appropriations for the U.S. Army Corps of Engineers (COE) Civil Works Budget.

The Alabama State Docks (ASD) is the local cost-sharing partner for the Mobile Harbor Federal Project. Recent (fiscal year 1998) waterborne commerce statistical data ranked the POM as the sixteenth largest port in the United States. Cargo transiting the POM is equally divided between foreign and domestic. As such the Alabama State Docks (ASD) supports fully funding the COE Civil Works requirements, not only for the Mobile Harbor but also for the six waterway systems serving the State of Alabama and five other States in this region (MS, TN, KY, GA & FL).

In authorizing the deepening of the Mobile Harbor Federal Project in 1986, environmental considerations resulted in a substantial increase in dredging costs. The Mobile District COE and ASD have worked closely and diligently to identify alternative methods of dredging and environmentally beneficial methods of disposal with the objective of reducing the cost of maintaining the project. One technique that has been successful is to create sumps within the channel, especially in areas with a history of high shoaling sedimentation rates. Such sumps allow for consolidation of the sediment, thereby extending the time between dredging events and (potentially) a reduced cost of removal. A second approach was to allow the shoaling of the channel toes thereby reducing the channel width while reducing the volume of material to be dredged. Thirdly, one-way vessel traffic was implemented to insure safe operations within the reduced channel width.

During the period of 1996–1998, all of these measures were used to control the cost of maintaining the Project. Actual maintenance costs average approximately $20,300,000 per year over this three year period. Unfortunately, the use of such measures is not without risk. In 1997 and 1998, the mid-Gulf Coast and Mobile Bay were directly impacted by the effects of hurricanes Danny and Georges. As a result the Corps of Engineers expended approximately $32,300,000 and nine months of

dredging effort in 1999 to restore the authorized operational dimensions of the channel.

This experience, and its negative impact upon the POM's operational capabilities, significantly hampered the region's ability to compete in the world bulk commodities market in 1999. The Port's vulnerability to again suffer severe impact is directly proportional to the maintained channel conditions. Given the Port's most recent five-year history, a normal scenario would project an annual maintenance cost of approximately $22,160,000 per year. Fortunately, the Project is currently in the best shape it has been in the last several years. It is, therefore, requested that the operation and maintenance budget for the Mobile Harbor Project for fiscal year 2001 be set at $21,165,000.

We thank you very much for this opportunity to present out supporting statement.

Prepared Statement of the Council of Alabama Waterway Associations

The following is a summary of the funding items for the U.S. Army Corps of Engineers for fiscal year 2001 to meet the needs of the several projects and which we ask the Committees to approve:

COUNCIL OF ALABAMA WATERWAY ASSOCIATIONS

[In thousands of dollars]

Waterway	Appropriation		President's budget fiscal year 2001	Our request for fiscal year 2001
	Fiscal year 1999	Fiscal year 2000		
Coosa-Alabama River Improvement Association: Coosa-Alabama	$27,025	$31,756	$27,525	[1] $29,155
Tennessee River Valley Association: Tennessee-Cumberland Navigation	112,519	122,555	84,935	[2] 121,435
Tennessee-Tombigbee Waterway Development Council: Tennessee-Tombigbee	20,200	21,500	23,547	[3] 25,700
Tri-Rivers Waterway Development Association: Appalachicola-Chattahoochee-Flint	5,200	6,500	5,055	[4] 7,255
Warrior-Tombigbee Waterway Association: Warrior-Tombigbee	20,000	19,200	19,805	[5] 20,725
Alabama State Docks Department: Mobile Harbor	21,000	19,562	18,665	[6] 21,665
Tennessee-Tombigbee and Tennessee River Association: Kentucky Lock (Nashville Dist. COE)	26,000	24,200	15,000	[7] 40,000

[1] Includes $5,865,000 for navigation O&M and $1,630,000 add-on for Mayo's Bar, Alltoona Lake and Coosa navigation project.
[2] Includes $40,000,000 for KY Lock Construction, $11,400,000 for 202 Program, $1,900,000 Chicamauga lock O&M.
[3] Includes $1,100,000 add-on for deferred maintenance.
[4] Includes $2,200,000 add-on for alternative dredging and disposal projects and environmental work.
[5] Includes $521,000 for General Investigations, $1,000,000 add-on for lock gates at Bankhead L&D.
[6] Includes $2,500,000 add-on to properly consider historical dredging needs and $499,000 for construction.
[7] See (2), Tennessee Cumberland request.

Request for Interior Appropriations; $400,000 for USF&WS Sturgeon Conservation Plan 2–9–2000.

Request for DOT Appropriations to USCG: $1,000,000 for 14 Mile Bridge, Mobile River.

Prepared Statement of the Steamship Association of Louisiana

SUMMARY

Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana (Construction General).—We recommended the Corps be funded to full capability in fiscal year 2001 to perform required work on the saltwater intrusion mitigation plan and complete design studies for phase III of the 55-foot channel.

Maintenance dredging of the Mississippi River from Baton Rouge to the Gulf of Mexico.—We urge approval of the $63,359,000 in the President's fiscal year 2001 budget under O&M General.

Mississippi River-Gulf Outlet maintenance dredging and bank stabilization.—In addition to the $11,286,000 in the President's fiscal year 2001 Budget under O&M General, we urge that the Corps be funded an increased capability in fiscal year 2001 to maintain this channel, which includes bank stabilization on both banks and jetty maintenance.

Inner Harbor Navigation Canal (IHNC) Lock.—Recognizing that only $14,349,000 is included in the President's fiscal year 2001 Budget for construction funds, we urge that the Corps be funded to full capability in fiscal year 2001 to continue lock construction and fully fund the community impact mitigation plan.

Calcasieu River and Pass, Louisiana.—We urge approval of the $12,117,000 in the President's fiscal year 2001 Budget under O&M General.

J. Bennet Johnston Waterway, Mississippi River to Shreveport, Louisiana.—Recognizing that $18,040,000 is in the President's fiscal year 2001 Budget for Construction General and $8,907,000 for O&M, we urge the Corps be funded to full compatibility for fiscal year 2001 to complete work already underway on this vital project.

The President's proposed Harbor service fee.—As in past years, we do not support the President's proposed fees to replace the Harbor Maintenance Tax. The strength of our nation's transportation system is its foreign and domestic waterborne commerce. It benefits the entire nation through revenue and jobs it provides the country. Therefore, the maintenance of our nation's ports should be handled through the general fund and not by placing another tax on this vital industry.

STATEMENT

Mr. Chairman: I am President of the Steamship Association of Louisiana (SALA). Our Association represents ship owners, operators, agents, and stevedores who handle the majority of the approximately 8,000 deep-draft vessels in waterborne commerce that call Louisiana's deep-water ports each year. SALA is dedicated to the safe, efficient movement of maritime commerce through the state's deep-water ports. We endorse the testimony of Mr. Donald T. Bollinger, Chairman of the Governor's Task Force on Maritime Industry.

Channel stabilization and maintenance dredging in Southwest Pass (SWP) are critical to keep project draft. Project draft ensures the Mississippi River's deep-water ports will continue to handle the country's foreign and domestic waterborne commerce in the most cost-effective way possible.

For years we have urged this Committee to provide funds to maintain project draft at SWP. You have responded, and your wisdom has benefitted the entire American heartland served by the Mississippi River system. SWP was greatly restricted throughout the 1970s. From 1970 to 1975, the channel was at less than project draft 46 percent of the time. In 1973 and 1974, the channel was below the 40-foot project draft 70 percent of the time. During some periods, drafts were limited to 31 feet. Fortunately, those conditions have not recurred because of a combination of factors: Your help, and the constant vigilance of the Pilots, the Corps, and the maritime community. The years 1990 through 1999 show a tremendous improvement in channel stability. We have only been below project draft 3 percent of the time for vessels under 100,000 deadweight tons and 8 percent of the time for vessels 100,000 deadweight tons or greater. The funding you provided was money well spent. The repairs to the jetties and dikes and the Corps' ability to rapidly respond to shoaling have been instrumental in maintaining project dimensions. However, the lack of available hopper dredges has, at times, jeopardized the stability of the channel.

The Pilots have taken advantage of tidal flows and other factors to recommend the maximum draft possible consistent with safe navigation. This stability represents additional sales and increased competitiveness for U.S. products on the world market. Industry's partnership with you has kept Mississippi River ports competitive and attractive to vessels. Twelve inches to a large vessel with a loading capacity of 250 tons per inch is an additional 3,000 tons of cargo. As of this writing, freight rates for grain moving from the Mississippi River to the Far East are $21.75 per ton. Using this figure, each foot of draft represents an additional $65,250 in vessel revenue, or $326,250 for the five additional feet over the old 40-foot project draft.

The funds we request for maintenance dredging and other works are essential for the Corps to maintain a reliable channel and respond rapidly to potential problems. This builds the confidence of the bulk trade in a reliable Mississippi River draft, which is critically important. Much of Louisiana's bulk trade is export agricultural products and coal and imports of petroleum products. These export commodities are

neither captive to Louisiana nor the United States if they can be shipped from competing countries at a consistently lower cost.

The deeper the channel, the more important channel stabilization is. Adequate channel stabilization work minimizes the maintenance cost of the deeper channel—a cost-effective investment. The faster the project is stabilized, the faster and greater the benefits of reduced O&M costs will be realized. Also, we recommend that the Corps conduct research on prototype dredging techniques.

Funds are also needed for dustpan dredges to work the crossings above New Orleans. These crossings control the draft to eight of our ten major grain elevators, plus many mid-stream and other bulk cargo facilities. This area caters to the bulk trade and must have a stable channel depth consistent with the depth at SWP. Only two dredges in the world are available to maintain the deep-draft crossings between New Orleans and Baton Rouge. There are times when a high river is followed by a rapid drop in the river's stage. In such cases, the dustpan dredges may not be available, or both dredges may not be capable of restoring the 12 crossings within a reasonable time. When this happens, hopper dredges are used to assist in the work.

For all of the above reasons, we request full funding for the mitigation features of the O&M General, 45-foot Mississippi River project.

We also support Phase III of the Mississippi River channel deepening project and urge that the Corps be funded to proceed with design studies for the 55-foot channel, Baton Rouge to the Gulf of Mexico.

The Mississippi River Gulf Outlet (MR–GO) is also a viable channel for the State of Louisiana. The funds you provided in past fiscal years have allowed the Corps to improve the channel considerably. However, the channel width has remained limited primarily because of erosion. For safety reasons in this narrow channel, one-way traffic restrictions apply to vessels with a draft of 30 feet or more, causing delays to the tightly-scheduled container traffic using the MR–GO. These specialty vessels serving the Port's facilities are becoming larger. The highest wages under the International Longshoreman's Association's contract ($24 per straight-time hour) is paid for work at the MR–GO container facilities. Anything that threatens the MR–GO jeopardizes these high-paying jobs, which are held mostly by minority workers.

To improve safety on the MR–GO and protect Louisiana's container trade (and the well-paying, minority employment it produces), we request that the Corps be funded to an increased capability for the MR–GO in fiscal year 2001. This will allow annual maintenance dredging, north and south bank stabilization, and jetty maintenance, which is essential to provide the stability needed for vessel and port operations.

With facilities located on both the MR–GO and the Mississippi River, an adequate route between the two is essential for efficient transit between these facilities. The shortest route is the inadequate, antiquated Inner Harbor Navigation Canal (IHNC) Lock built in the 1920s with a width of 75 feet and limited depth of 30 feet. Its maximum capacity has long been exceeded. The average waiting time for passage through the Lock has increased from 8½ hours in 1985 to about 12 hours at present; however, we understand that waiting time can be more than a day in some instances. A much larger ship lock is necessary to accommodate today's traffic.

The replacement project for the IHNC Lock is important to the ports on the lower Mississippi River and to the nation's commerce since it is on the corridor for east/west barge traffic. The President's fiscal year 2001 budget of $14,349,000 is not sufficient. Without full funding, the project will be delayed and increase the overall cost of the project. We urge Congress to provide the Corps' full fiscal year 2001 capability for this important project to insure its completion. Delays are unthinkable since the new lock is long overdue.

The Port of Lake Charles, Louisiana, is served by the Calcasieu River, which is often below project depth and width. This is another of Louisiana's major deep-water ports that benefits the economy of the state and the nation. According to the Port's figures, the import and export tonnage at their facilities was 5 million tons in 1999. Also in 1999, there was a total of 1,132 vessels, both deep draft and barges, that utilized the Port's Facilities. These figures do not take into account the other private facilities that utilize this valuable waterway. The public and private facilities along this waterway provide thousands of jobs for the Lake Charles area. This channel, because of its project deficiencies, requires one-way traffic for many ships, causing delays that disrupt cargo operations. This is costly and inefficient for industry. The Port area's growth and continued success depends on a reliable and safe channel that should be at full project. We request funding to the full capability of the Corps to maintain this channel at its project dimensions.

The J. Bennett Johnston Waterway, Mississippi River to Shreveport, Louisiana, Project is directly related to our deep-water ports. The continuation and completion

of this work will stimulate the economy all along the Red River Basin with jobs and additional international trade. This stimulated trade will service the Port of Shreveport and the ports on the lower Mississippi River, providing needed growth and benefitting the States of Louisiana, Texas, Oklahoma, and Arkansas, which are served through the Shreveport distribution center. Therefore, we strongly recommend that the Corps be funded to full capability for fiscal year 2001.

The proposed Harbor Service Fee (HSF) in the President's budget, which would replace the Harbor Maintenance Tax, is ill-advised. What it fails to recognize is that there is no equitable way in which the cost can be spread fairly among the shipping community. Whether the HSF is to the cargo or to the ship, the fee will change trade patterns and even jeopardize our trading position in the world market. The proposal will disrupt jobs and the economies of port areas. It will circumvent the normal, healthy competition among U.S. ports. Ships carrying low-valued cargo, primarily bulk cargoes, operate on a very low profit margin; therefore, cargoes like grain and coal can least afford the tax. The end result could well be that the U.S. could lose its ability to compete in the world market for the export of these cargoes. This impact on bulk trade will be particularly detrimental to Louisiana because of the high volume of such cargoes that move through our state. We encourage Congress to fund the maintenance of our nation's ports through the General Fund. After all, it is the people of our entire nation who benefit from a strong U.S. position in world trade, not only the shipping industry. If our nation is to remain competitive in the world market, we must maintain and improve our waterways and deliver U.S. goods at the lowest possible price to foreign markets.

Thank you for allowing the Association to submit testimony on the Corps' funding needs.

PREPARED STATEMENT OF THE GULF INTRACOASTAL CANAL ASSOCIATION

This testimony for the record, March 10, 2000, before House and Senate Energy and Water Development Appropriations Subcommittees is submitted by Douglass W. Svendson, Jr., Executive Director of the Gulf Intracoastal Canal Association. Ours is the oldest of the regional waterway associations, having been established in Victoria, Texas in 1905. The Gulf Intracoastal Waterway transports 115 million tons of freight annually, the third highest volume among our inland and coastal waterways after the Mississippi and Ohio Rivers.

GICA's membership includes both shallow draft and deep draft ports, port commissions and navigation districts, barge and towing companies, petroleum refineries, chemical manufacturers, shipyards, marine fabricators, fuel terminal facilities, and individuals whose businesses are waterway related and dependent. We have 180 members in the five States of Texas, Louisiana, Mississippi, Alabama, and Florida served by the Gulf Intracoastal Waterway. In addition, the GIWW is the link that binds the North-South rivers to the Intracoastal canal, the coastal ports, and ultimately the heartland of America. The Mississippi River intersects the GIWW at New Orleans, one of our busiest ports, and the Tennessee-Tombigbee Waterway intersects the GIWW at Mobile.

THE OVERALL CIVIL WORKS BUDGET OF $4.064 BILLION FOR FISCAL YEAR 2001

While this civil works budget request for fiscal year 2001 is larger than those submitted by the Administration in recent previous years, it causes our membership concern about adequacy of specific levels allocated to construction, operations and maintenance, and flood control. The reason for our concern is the large amount in the 2001 budget proposed to be appropriated for port construction and maintenance ($950 million) and the size of the environmental portion of the proposed 2001 budget (22 percent of overall Corps request and slightly over $895 million). O and M and flood control remain about the same level in comparison to appropriated amounts for fiscal year 2000, but construction funding for 2001 is less than the 2000 figure.

THE PORT FEE AND HARBOR SERVICES FUND

The combination user fee and Harbor Services Trust Fund for port maintenance proposed by the administration in its budget raises several very serious issues for waterborne transportation, our domestic economy, and international trade.

Whatever the constitutional infirmities of the previous harbor maintenance tax, it was spread over a large base of commerce. This fact alone helped mitigate a potentially harsh economic impact which might otherwise have been injurious to many of our ports, our trade, and our economic jobs base.

The proposed fee will be based on volume or tonnage, not value. Those most injured will be our ports that ship large volumes of commodities. This negative impact will ultimately fall on farmers, mine operators, chemical and petroleum sectors, and all commodities producers. Farmers and other producers have historically benefited economically by retaining more of the ultimate sales price in their own pockets, as a result of water transportation efficiencies.

A user fee, as proposed, is much more likely, we believe, to be port and/or vessel specific, thus location dependent, and harm many but the very largest ports. Even large ports stand to lose as a result of the fees that could be levied on many bulk commodities which are routinely traded on world markets. For commodities, successful trades often are determined by pennies per unit of measure, or less. Margins are exceedingly thin and relatively large fees will easily disrupt normal buyer-seller patterns. Our commodities producers such as coal, chemicals, and agricultural products stand to lose sales and market share.

A related problem involves the nature of our ports in the overall economy. Ports generate jobs themselves and also provide the impetus for related industries to establish themselves adjacent or nearby. Benefits of port spending are therefore quite broad in terms of regional and national economies. Port related growth is not characterized by only a few, specific identifiable beneficiaries we usually associate with the obligation to pay user fees. Port beneficiaries, including jobs creation and revenue enhancement, are the thousands of citizens in the affected locale or region. The numbers involved are broad and diverse—just such a class of people we usually call the general population. General revenues are employed to fund programs for this large a segment of the population

Thus, the national benefits and economic significance associated with the sum total of port activities places these entities in a category which is easily able to justify the use of general revenues in support of broad, general economic benefits. Our association recommends that the Congress look seriously at funding port activities from general revenues, as was done prior to WRDA 1986.

SPECIFIC BUDGET REQUESTS FOR FISCAL YEAR 2001

The Gulf Intracoastal Canal Association supports the Administration's budget request of $53.5 million for deepening and widening the Houston—Galveston Ship Channel. This project has enormous favorable economic implications for the regional and national economy. It also offers an opportunity to increase deep draft/shallow draft navigation safety.

Approximately 100,000 barge tows and 20,000 ships transit the Houston Ship Channel each year. In response to the last major barge and ship collision causing a serious oil spill in 1992, the Houston Galveston Area Navigation Safety Committee (HOGANSAC) began studying how to prevent ship/barge collisions on the Channel. With the work of a broad coalition of deep and shallow draft mariners, shippers, the Houston Pilots, environmental groups, the Corps and the Coast Guard, a solution was developed. The plan was to move the beacons to a straight line 500 feet either side of the centerline of the channel between Bolivar and Morgans Point and dredge the area between the beacons and the deep draft channel to a depth of 12 feet to allow barge tows to operate outside the deep draft channel.

We also support funding for the GIWW Section 216 Studies in the President's budget, identified as RCP, Review of Completed Projects. They are Brazos River to Port O'Connor, Texas, High Island to Brazos River, Texas, and Port O'Connor to Corpus Christi, Texas. Within the Brazos River to Port O'Connor study, we support the PED request of $100,000 referred to as GIWW Matagorda Bay, Texas. In particular, we strongly encourage funding for the re-route of the GIWW through Matagorda Bay as well as funding for the Colorado and Brazos River lock and floodgate studies, in excess of levels contained in the President's budget.

Our association also endorses the President's budget request of $6.1 million for construction of the channel to Victoria, Texas. We urge the committee to provide funds for completion as soon as possible, consistent with the Corps' full capability.

We support surveys funding in the President's budget for Calcasieu Lock, Louisiana ($399,000) and Intracoastal Waterway Locks Study, Louisiana ($686,000).

We support funding for the replacement of the Inner Harbor Navigation Canal Lock to the extent of the Corps' full capability. We encourage the committee to make certain this project is expedited, rather than stretched out. The Inner Harbor Navigation Canal Lock is now in construction and has a solid favorable benefit to cost ratio. While some political environmental organizations would like to put the IHNC lock replacement project in the same controversial category in which several Upper Mississippi and Illinois lock replacement projects now find themselves, this is a stretch of monumental proportions. The economic justification for the IHNC has not

been questioned, either by honest, objective efforts, or otherwise, in the same way the recent Upper Mississippi Study has.

The Gulf Intracoastal Canal Association also supports the operations and maintenance funding request for Tri Rivers Waterway Development Association. We support sound economic development efforts to improve the ACF waterway as a vital link for southeast Alabama, southwest Georgia, and northwest Florida to export goods to other national and international markets via the Gulf Intracoastal Waterway.

We support inland waterway navigation as an environmentally sound and cost effective transportation mode in the Gulf South region, helping to reduce freight rates and promoting trade and development.

GICA supports additional funding for section 423 of WRDA 1999. This section directs the Secretary of the Army to do a study of GIWW bank erosion in the State of Louisiana and thereafter to cost share with the Louisiana Department of Natural Resources bank stabilization work. The study was not funded in the President's Year 2001 budget, but is vital as a necessary component of the state and U.S. Army Corps of Engineers' ongoing effort to deal effectively with land loss in coastal areas and old river deltas of South Louisiana.

In addition, we support the President's budget request for Pascagoula, Mississippi harbor project ($6,663,000) and Mobile, Alabama harbor project ($499,000).

Because of the high visibility of the recent Washington Post and political environmental organizations' charges against the U.S. Army Corps of Engineers, it is important to share with this committee our general views on this subject.

Neither our association nor I personally have been involved in the Upper Mississippi Study. However I, as well as GICA, work with the U.S. Army Corps of Engineers on studies and navigation, flood control, and environmental projects in the Gulf South Region, which includes the New Orleans District and the Mississippi Valley Division. In addition, I have worked with Corps personnel from Headquarters, and from Division and District offices for many years on issues involving standards for evaluating navigation, flood control, and environmental projects. Never in my years of experience have I observed any actions even closely resembling those charged by the Post and its political environmental organization allies.

I would like to point out to the Committee that the standards for measuring and evaluating criteria applicable to Corps' projects of all kinds are not without some controversy on a case by case basis. Economics, including formulas and models developed by those who pursue this field, is usually characterized by subjective judgments. When and under what circumstances shippers decide to alter freight patterns from one mode to another is not usually announced in advance. Estimates of relevant factors in models, devised to predict future economic behavior, can be as subjective as objective.

As these allegations are reviewed I believe it is important to keep in mind that project economic justification as it relates to environmental impacts and consequences, is not always reducible to clean "yes" and "no" answers.

This concludes our prepared testimony. We appreciate the opportunity to provide this statement for the record.

PREPARED STATEMENT OF THE LOUISIANA GOVERNOR'S TASK FORCE ON MARITIME INDUSTRY

Mississippi River Ship Channel, Gulf to Baton Rouge, LA. (construction General).—Recommend the Corps be funded to full capability in fiscal year 2001 to perform required work on the saltwater intrusion mitigation plan and complete design studies for potential phase III 55-foot channel.

Mississippi River, Baton Rouge to the Gulf, maintenance dredging.—Recommend approval of President's fiscal year 2001 Budget of $63,359,000 under O&M General.

Mississippi River-Gulf Outlet (MR-GO), LA., maintenance dredging.—President's fiscal year 2001 Budget is $11,286,000 under O&M General. Recommend that Corps be funded increased capability for bank stabilization.

Inner Harbor Navigation Canal (IHNC) Lock, LA..—President's fiscal year 2001 Budget includes $14,349,000 in construction funds for the IH-NC New Ship Lock. Recommend that Corps be funded to full capability to continue lock construction and fully fund the community impact mitigation plan.

Mississippi River Outlets at Venice, LA.—Recommend approval of President's fiscal year 2001 Budget is $2,773,000 under O&M General.

Intracoastal Waterway Locks, LA.—Recommend approval of the President's fiscal year 2001 budget of $686,000 to complete the feasibility study and to develop plans

for replacement of Bayou Sorrel Lock on the Gulf Intracoastal Water Way (GIWW), Morgan City-to-Port Allen alternate route.

Gulf Intracoastal Waterway, LA. and TX.—President's fiscal year 2001 Budget is $19,478,000 under O&M General. Recommend that Corps be funded increased capability to construct a set of two miter gates for Leland Bowman Lock and 20 additional mooring buoys at various locations along the GIWW.

Calcasieu Lock, LA.—Recommend approval of President's fiscal year 2001 budget of $339,000 in GI funds to continue the feasibility phase of the study to replace Calcasieu Lock on the GIWW.

Calcasieu River and Pass, LA.—Recommend approval of the President's fiscal year 2001 Budget of $12,117,000 under O&M General to continue dredging and operation and maintenance of the Saltwater Barrier.

J. Bennett Johnston Waterway, Mississippi River to Shreveport, LA.—President's fiscal year 2001 is $18,040,000 in Construction General and $8,907,000 for Operations and Maintenance. Recommend that Corps be funded to full capability to complete work already underway.

As Chairman of the Louisiana Governor's Task Force on Maritime Industry, I hereby submit testimony to the Senate Subcommittee on Energy and Water Development on behalf of the ports on the lower Mississippi River, the J. Bennett Johnston Waterway and the Calcasieu River waterway and the maritime interests related thereto of the State of Louisiana relative to Congressional appropriations for fiscal year 2001.

The U.S. Army Corps of Engineers reports that in 1998 a total of 418.1 million tons of foreign and domestic waterborne commerce moved through the consolidated deepwater ports of Louisiana situated on the lower Mississippi River between Baton Rouge and the Gulf of Mexico. Deepening of this 232-mile stretch of the River to 45 feet has been a major factor in tonnage growth at these ports. Due in large part to the efforts of Congress and the New Orleans District of the Corps, Louisiana's ports and the domestic markets they serve can compete more productively and effectively in the global marketplace. Ninety-one percent of America's foreign merchandise trade by volume (two-thirds by value) moves in ships, and 20.3 percent of the nation's foreign waterborne commerce passes through Louisiana's ports. Given the role foreign trade plays in sustaining our nation's growth, maintaining the levels of productivity and competitiveness of Louisiana's ports is essential to our economic well-being.

In terms of transportation services and global access, Louisiana ports enjoy a distinct competitive advantage. Hundreds of barge lines accommodate America's waterborne commerce on the lower Mississippi River. The high level of barge traffic on the river is indicated by the passage of more than 229,000 barges through the Port of New Orleans annually. In 1998, 2,536 ocean-going vessels operated by more than 80 steamship lines serving U.S. trade with more than 150 countries called at the Port of New Orleans. The Port's trading partners include: Asia (33.7 percent); Latin America (32.1 percent); Europe (25 percent); Africa (7.6 percent) and North America (1.5 percent). During the same year, more than 6,377 vessels called at Louisiana's lower Mississippi River deepwater ports.

The foreign markets of Louisiana's lower Mississippi River ports are worldwide; however, their primary domestic market is mid-America. This heartland region currently produces 60 percent of the nation's agricultural products, one half of all of its manufactured goods and 90 percent of its machinery and transportation equipment.

The considerable transportation assets of Louisiana's lower Mississippi River ports enable mid-America's farms and industries to play a vital role in the international commerce of this nation. In 1998, the region's ports and port facilities handled 216 million tons of foreign waterborne commerce. Valued at $34.4 billion, this cargo accounted for 17.7 percent of the nation's international waterborne trade and 24.4 percent of all U.S. exports. Bulk cargo, primarily consisting of tremendous grain and animal feed exports and petroleum imports, made up approximately 89 percent of this volume. Forty-five million tons of grain from 17 states, representing 54.75 percent of all U.S. grain exports, accessed the world market via the 10 grain elevators and midstream transfer capabilities on the lower Mississippi River. This same port complex received 79.4 million short tons of petroleum and petroleum products, 14.6 percent of U.S. waterborne imports of petroleum products.

In 1998, public and private facilities located within the jurisdiction of the Board of Commissioners of the Port of New Orleans, the fourth largest port in the United States, handled a total of 88.8 million tons of international and domestic cargo worth. International general cargo totaled 14.1 million tons. Although statistically dwarfed by bulk cargo volumes, the movement of general cargo is of special significance to the local economy because it produces greater benefits. On a per ton basis,

general cargo generates spending within the community more than three times higher than bulk cargo. Major general cargo commodities handled at the Port include: iron and steel products; coffee; forest products; copper; aluminum products; and natural rubber.

Fostering the continued growth of lower Mississippi River ports is necessary to maintain the competitiveness of our nation's exports in the global marketplace and, consequently, the health of the nation's economy. Assuring deep water access to ports has been a priority of our trading partners around the world. Moreover, an evolving maritime industry seeking greater economies of scale continues to support construction of larger vessels with increased draft requirements. Because it facilitated the provision of deepwater port access, passage of the Water Resources Development Act of 1986, played a most significant role in assuring the competitiveness of ports on the lower Mississippi river and throughout the U.S.

By December, 1994, the Corps completed dredging of the 45-foot channel from the Gulf of Mexico to Baton Rouge, LA (Mile 233 AHP). Unfortunately, mitigation features associated with the first phase of the channel deepening project in the vicinity of Southwest Pass of the river, accomplished in 1988, have yet to be completed. We urge the inclusion of additional funding above the President's budget in fiscal year 2001 to complete an ongoing contract for improvements to the Belle Chasse water treatment plant. This will complete the approximate $15 million in payments to the State of Louisiana for construction of a pipeline and pumping stations to deliver potable fresh water to communities affected by saltwater intrusion. We further urge that the Corps be provided funding to proceed with design studies for Phase III which will allow deepening of the river to the 55-foot authorized depth.

Along with the Port of New Orleans, the Port of South Louisiana, the nation's largest port with 196.6 million tons of foreign and domestic cargo in 1998, and the Port of Baton Rouge, the nation's sixth largest port with 66.8 million tons of foreign and domestic cargo in 1998, and other lower Mississippi River ports are dependent upon timely and adequate dredging of Southwest Pass to provide deep draft access to the Gulf of Mexico. Based on past experience—spring thaws bringing higher river stages and higher siltation rates—we strongly urge full funding of the President's fiscal year 2001 Budget amount of $63,359,000 under O&M General for maintenance of the 45-foot project channel. Funding includes monies for both dredging and repairs to foreshore dikes; lateral dikes; and jetties. Revetment construction has reduced the number and size of deep draft anchorages. To mitigate this loss, we recommend that the Corps be authorized under the O&M General appropriation to construct new anchorages and maintain new and existing anchorages to accommodate increased ship traffic.

Maintenance of adequate depths and channel widths in the Mississippi River Gulf Outlet Channel (MRGO) is also of great concern. This channel provides deep draft access to the Port of New Orleans' principal container terminals and generates an annual economic impact of nearly $800 million. In 1998, 455 general cargo vessels calling on the MRGO Tidewater facilities accounted for 22.4 percent of the general cargo tonnage handled over public facilities at the Port of New Orleans and 80.21 percent of Louisiana's containerized cargo.

Because of the MRGO's demonstrated vulnerability to coastal storm activity, annual channel maintenance dredging and bank stabilization are essential to assure unimpeded vessel operations. In 1998, heavy shoaling related to Hurricane Georges resulted in the imposition of a draft restriction from the project depth of 36 feet to 25 feet. The President's fiscal year 2001 Budget amount is $11,286,000 under O&M General. We, however, strongly recommend that the Corps be funded increased capability for bank stabilization projects.

The Inner Harbor Navigation Canal (IHNC) Lock is a critical link in the Gulf Intracoastal Waterway (GIWW), and provides a connection between the Port of New Orleans' Mississippi River and IHNC terminals. In 1998, the Corps approved a plan for replacement of this obsolete facility. The Corps estimates that the lock replacement project will have a cost-benefit ratio of 1.7 to one and will provide $110 million annually in transportation cost savings. In addition to minimizing adverse impacts to adjacent neighborhoods, the project includes a $33 million Community Impact Mitigation Program. The President's fiscal year 2001 Budget of $14,239,000 for the IHNC New Ship Lock will pay for continued engineering and design work, construction, and partial funding of the mitigation program. Therefore, funding the Corps to full capability to continue lock construction and fully implement the mitigation program is recommended.

Operation and maintenance of the Mississippi River Outlets at Venice, La. are essential to providing safe offshore support access to energy-related industries. In 1998, these channels accommodated cargo movements exceeding 3.4 million tons. In addition to routine traffic, Baptiste Collette Bayou is used by shallow draft vessels

as an alternate route between the MRGO, GIWW and the Mississippi River. The President's fiscal year 2001 Budget amount is $2,773,000 under O&M General.

More than 78.6 million tons of cargo transverse the GIWW in the New Orleans District annually. The President's fiscal year 2001 Budget for Gulf Intracoastal Waterway, Louisiana and Texas is $19,478,000 under O&M General. We recommend that the Corps be funded increased O&M capability to construct a set of two miter gates for Leland Bowman lock and 20 additional mooring buoys at various locations along the GIWW.

To assure the efficient flow of commerce on the GIWW, approval is urged for the President's fiscal year 2001 budget of $686,000 in GI funds to complete the feasibility study and to develop plans for replacement of the Bayou Sorrel Lock, Morgan City-to-Port Allen alternate route. We further recommend approval of the President's budget fiscal year 2001 of $339,000 in GI funds to continue the feasibility phase of the study to replace Calcasieu Lock on the GIWW.

The Port of Lake Charles, Louisiana, is served by the Calcasieu River, which often does not meet project depth and width requirements. This Port is one of Louisiana's major deep-water ports, benefitting the economy of the state and the nation. In 1998, the Port handled 34.3 million tons of import cargo and 15.8 million tons of export cargo. The Port and private facilities along this waterway provide thousands of jobs for the Lake Charles area. In 1997, 1,037 ships and 7,219 barges used the Calcasieu River waterway. The Port area's growth and continued success depends on the provision of a reliable and safe channel at full project dimensions. We recommend approval of the President's fiscal year 2001 budget of $12,117,000 under O&M General to continue dredging and operation of the saltwater barrier.

One additional project warrants consideration. The J. Bennett Johnston Waterway, Mississippi River to Shreveport, La. Project provides 236 miles of navigation improvements, 225 miles of channel stabilization works and various recreational facilities. Project completion will stimulate economic growth along the Red River Basin and increase cargo flows through the deep draft ports on the lower Mississippi River. The President's fiscal year 2001 Budget includes $18,040,000 in Construction General and $48,907,000 for Operations and Maintenance. We recommend that the Corps be funded to full capability for this project to complete work already underway.

The need and impetus to reduce the Federal budget is certainly acknowledged; however, reduced funding on any of the above projects will result in decreased maintenance levels which will escalate deterioration and, ultimately, prevent them from functioning at their full authorized purpose. Reduction in the serviceability of these projects will cause severe economic impacts not only to this region, but to the nation as a whole that will far outweigh savings from reduced maintenance expenditures. Therefore, we reiterate our strong recommendation that the above projects be funded to their full capability.

Supporting statements from Mr. J. Ron Brinson, President and CEO of the Port of New Orleans; Mr. Gary P. LaGrange, Executive Director of the Port of South Louisiana, Mr. Roger Richard, Executive Director of the Greater Baton Rouge Port Commission, Mr. Glenwood Wiseman, Executive Director of the Lake Charles Harbor and Terminal District, Mr. Benny Rousselle, President of Plaquemines Parish, Mr. Channing Hayden, President of the Steamship Association of Louisiana; Capt. John Levine, President of the Associated Branch Pilots and Capt. Mark Delesdernier, President of the Crescent River Port Pilots Association are attached. Please make these statements along with my statement part of the record. Supplemental graphics relating to my statement have been furnished separately for staff background use. Thank you for the opportunity to comment to the subcommittee on these vital projects.

[CLERK'S NOTE: The referenced material above can be found in the Energy and Water Development Subcommittee's files for an extended time.]

PREPARED STATEMENT OF THE RED RIVER VALLEY ASSOCIATION

INTRODUCTION

The Red River Valley Association is a voluntary group of citizens bonded together to advance the economic development and future well-being of the citizens of the four state Red River Basin area in Arkansas, Louisiana, Oklahoma and Texas.

For the past 75 years, the Association has done notable work in the support and advancement of programs to develop the land and water resources of the Valley to the beneficial use of all the people. To this end, the Red River Valley Association offers its full support and assistance to the various Port Authorities, Chambers of

Commerce, Economic Development Districts and other local governmental entities in developing the area along the Red River.

The Resolutions contained herein were adopted by the Association during its 75th Annual Meeting in Bossier City, Louisiana on February 24, 2000, and represent the combined concerns of the citizens of the Red River Basin area as they pertain to the goals of the Association, specifically:

—Economic and Community Development
—Environmental Restoration
—Flood Control
—Bank Stabilization
—A Clean Water Supply for Residential, Commercial, Industrial and Agriculture Uses.
—Hydroelectric Power Generation
—Recreation
—Navigation

The Red River Valley Association is aware of the constraints on the federal budget, and has kept those restraints in mind as these Resolutions were adopted. Therefore, and because of the far-reaching regional and national benefits addressed by the various projects covered in the Resolutions, we urge the members of Congress to review the materials contained herein and give serious consideration to funding the projects at the levels requested.

STATEMENT

Mr. Chairman and members of the Committee. I am Wayne Dowd, Arkansas State Senator, and I am pleased to represent the Red River Valley Association as its President. Our organization was founded in 1925 with the express purpose of uniting the Citizens of Arkansas, Louisiana, Oklahoma and Texas to develop the land and water resources of the Red River Basin.

We appreciate the President's fiscal year 2001 Civil Works budget submission of approximately $4.1 billion from his fiscal year 2000 submission of $3.9 billion; however, it does not come close to the real needs of our nation. $5 billion is a realistic funding level to meet the requirements for continuing programs. The traditional programs, inland waterways and flood protection remain at the low, unacceptable level as in past years. These traditional civil work projects are the backbone to our nation's infrastructure for waterways, flood control and water supply. We remind you that these projects are a true 'jobs program' in that 100 percent of the construction is contracted to the private sector as is much of the architect and engineer work. Not only do these funds provide jobs, but provide economic development opportunities for our communities to grow and prosper.

The civil works program is a catalyst that is responsible for the great economy we now experience. It would be irresponsible to allow our nations infrastructure to deteriorate, or worse, stop its growth in a time when America must be the leader in the world market. Our inland waterways is the key to our dominance in world trade. This is a pivotal budget year where critical decisions must be made which will determine our future economic strength.

In recent months there has been negative publicity, generated by the Environmental Defense Fund (EDF), toward Red River projects and the U.S. Army Corps of Engineers, Civil Works programs, as a whole. The economic information and analysis made by the EDF is simply unfounded. The accusations are not correct and in fact the Red River Navigation project has been a success economically and environmentally. A group of organizations, to include the RRVA, will be presenting a 'white paper' to demonstrate the true benefits associated with the Red River Waterway. This document will be presented to the subcommittee members once it is completed.

I would now like to comment on our specific requests for the future economic well-being of the citizens residing in the four state Red River Basin area.

Navigation.—The J. Bennett Johnston Waterway is living up to the expectations of the benefits projected. The tonnage moved in 1998 was 3.7 million tons with the projected tonnage, to justify the project, at 3.6 million tons. Estimates for 1999 are close to 4.0 million tons. We are extremely proud of our public ports, municipalities and state agencies who have created this success. New facilities opened in 1999 included a fertilizer terminal at the Port of Shreveport-Bossier and stone distribution at the Port of Natchitoches. Liquid petroleum shipments increased in 1999 as did commercial stone operations. Currently under construction, at the public ports , are a wood chip barge loading system, liquid petroleum tank farm, and general cargo warehouse facility. You are reminded that the Waterway is not complete, ten percent remains, $200 million. We appreciate the President's budget level of $18 million; however, we respectfully request the expressed Corps capability of $23 million.

In order to keep the waterway safe and reliable we must continue at a funding level higher than the President's Budget. The RRVA formed a Navigation Committee for industry, the Corps and Coast Guard to partner in making our Waterway a success. This effort has reaped many benefits. We can not sacrifice what has been accomplished by inadequate funding levels.

In fiscal year 2000 you reprogrammed funds to initiate the feasibility study to extend navigation from Shreveport-Bossier City, Louisiana into the State of Arkansas. It is imperative that you continue funding this important study and support the $200,000 included in the President's Budget. Many areas continue to suffer major unemployment, and the navigation project, although not the total solution, will help revitalize the economy in this region. The U.S. Fish and Wildlife Service 'Planning Aid Report' indicated minimal impact and most probably an enhancement to environmental value. Last summer colonies of least terns (an endangered species) were found on stabilized sandbars in the Waterway in Louisiana as well as an increase in numbers and species of migratory birds due to the newly formed pools. This will be a multipurpose project addressing navigation, hydropower, bank stabilization and environmental restoration. I want to stress that the local sponsor, the Arkansas Red River Commission, has available their 50 percent cost share for the complete feasibility study. Few local sponsors have 'funds in the bank' and are also willing to fund additional studies to insure a complete and accurate analysis is made.

Bank Stabilization.—One of the most important continuing programs on the Red River is bank stabilization in Arkansas and North Louisiana. We must stop the loss of valuable farmland that erodes down river and interferes with the navigation channel. In addition to the loss of farmland is the threat to public utilities such as roads, electric power lines and bridges; as well as increased dredging cost in the navigable waterway. These revetment projects are compatible with subsequent navigation and we urge that they be continued in those locations designated by the Corps of Engineers to be the areas of the worst erosion. We appreciated Congressional funding in fiscal year 2000 and request you again fund this project at a level of $10 million.

It is essential to protect the banks from caving and erosion along the Red River below Denison Dam, Texas to Index, Arkansas along the Texas/Oklahoma border. The Federal Government constantly encourages its farmers to protect their lands against all forms of erosion, so it only makes sense to be consistent. An authorized project exists; 'Red River Waterway, Index, AR to Denison Dam, TX, Bank Stabilization', so the issue lies with the benefit/cost ratio. We believe that the authorized, on going 'Sediment Transport Study' will identify benefits due to reduced dredging cost in the navigable Waterway in Louisiana.

There is a new technique for bank stabilization which could be tested as a demonstration project under this authorization. This new technique, underwater bendway weirs, has proven to be less expensive than conventional methods and more efficient in controlling the energy of the river as well as providing environmental benefits. Over 1,000 acres of prime farmland in Oklahoma and Texas is lost each year to river erosion and we must investigate all avenues to correct this problem. You funded the initiation of this project in fiscal year 1999 and we request you continue that initiative, in this appropriation, at a level of $5.5 million, the expressed Corps capability.

Flood Control.—You will recall that in 1990 major areas of northeast Texas, Southwest Arkansas and the entire length of the Red River in Louisiana were ravaged by the worst flooding to hit the region since 1945 and 1957. More than 700,000 acres were flooded with total damages estimated at $20.4 million. However, it could have been much worse. The Corps of Engineers estimates that without the flood control measure authorized by Congress over the past several decades an additional 1.3 million acres would have been flooded with an estimated $330 million in additional flood damage to agriculture and urban developments.

We continue to consider flood control a major objective and request you continue funding the levee rehabilitation projects ongoing in Arkansas and Texas. Four of eleven items have been completed on levees rehabilitated to meet federal standards. $4 million will construct two more items; completing Miller County, AR and starting levees in Lafayette County, AR.

In addition, Bowie County levee, in Texas, is crucial to the integrity of the Arkansas levee system. Should the Bowie levee fail flood waters will inundate behind the just competed Miller County levees in Arkansas. It is important to have this project funded at $900,000, for the 'locally preferred' option, according to cost sharing under the Flood Control Act of 1946, not withstanding economic justification.

The levees in Louisiana have been incorporated in the Federal system; however, do not meet current construction standards due to their age. These levees do not have a gravel surface, on top, threatening their integrity during times of flooding.

It is essential for personnel to traverse the levees during a flood to inspect them for problem areas. Without the gravel surface the vehicles used cause rutting and themselves can create conditions for the levees to fail. Gravel surfaces will insure inspection personnel can check the levees during the saturated conditions of a flood. We propose a three phase, three year project to correct this Valley wide problem in Louisiana. The first year requires a funding level of $2,654,000 with the whole project costing $8,361,000.

Clean Water.—Nearly 3,500 tons of natural salts, primarily sodium chloride, enter the upper reaches of the Red River each day, rendering downstream waters unusable for most purposes. The Truscott Brine Lake project, which is located on the South Fork of the Wichita River in King and Knox Counties, Texas became operational in 1987. An independent panel of experts found that the project not only continues to perform beyond design expectations in providing cleaner water, but has an exceptionally favorable cost benefit ratio. $16 million dollars was appropriated in fiscal year 1995, by the Administration, to accelerate engineering design, real estate acquisition and initiate construction of the Crowell Brine Dam, Area VII and Area IX. Due to a conflict over environmental issues, raised by the U.S. Fish and Wildlife Service, completion of the SFEIS was delayed pending further study to determine the extent of possible impacts to fish and wildlife, their habitats and biological communities along the Red River and Lake Texoma. In an effort to resolve these issues and insure that no harmful impact to the environment or ecosystems would result, a comprehensive environmental and ecological monitoring program was implemented. It evaluates the actual impacts of reducing chloride concentrations within the Red River watershed. This base line data is crucial to understanding the ecosystem of the Red River basin west of Lake Texoma and funding for this must continue.

Dr. Westphal, Assistant Secretary of the Army (Civil Works), in October 1998 agreed to support a re-evaluation of the Wichita River Basin portion of the project. Completion of this tributary will reclaim Lake Kemp as a usable water source for the region. As was done in fiscal year 2000 we support the reprogramming of $1,351,000 to continue this important project. The drought experienced in the Red River Valley, these past two years, has highlighted the critical need for this usable water source.

Operation & Maintenance.—We appreciate the support of your subcommittee to support navigation to Shreveport/Bossier City which is now providing an increase to our industrial base, creating jobs and providing economic growth. We request that O&M funding levels remain at the expressed Corps capability to maintain a safe, reliable and efficient transportation system. As experienced two years age failure to maintain a revetment for $500,000, when the problem was first identified, resulted in a catastrophic failure of the revetment and adjacent levee. This led to an emergency repair of $5 million which could have been prevented. The President's budget level of $8.9 million does not address the backlog of maintenance at the five lock and dams or deteriorating dikes and revetments. The Corps capability of $15,237,000 million is required to maintain a safe waterway.

Full O&M funding levels is not only important for the Waterway project but for all our Corps projects and flood control lakes.

We are sincerely grateful to you for the past support you have given our various projects. We hope that we can count on you again to fund our needs and complete the projects started that will help us diversify our economy and create the jobs so badly needed by our citizens. We have included a summary of our requests for easy reference.

Thank you for the opportunity to present this testimony and project details of the Red River Valley Association on behalf of the industries, organizations and citizens we represent throughout the four state Red River Valley region. We believe that any federal monies spent on civil work projects are truly investments in our future and will return several times the original investment in benefits that will accrue back to the Federal Government.

I am always available to provide you and your staff additional information or clarification on any issue presented.

GRANT DISCLOSURE

The Red River Valley Association has not received any federal grant, subgrant or contract during the current fiscal year or either of the two previous fiscal years.

SUMMARY OF FISCAL YEAR 2001 REQUESTS

NOTE.—Projects are NOT in any order of priority.

Studies

Red River Navigation, SW Arkansas.—This is a feasibility study initiated on March 24, 1999 to investigate the potential to extend navigation from Shreveport/Bossier, LA to Index, AR. To date $1,783,000 has been "reprogrammed" for this study from another Red River study. The President's budget included $200,000 for fiscal year 2001. An additional $417,000 is required to complete the study in fiscal year 2002. The study is cost shared 50 percent with the Arkansas Red River Commission, the local sponsor.

President's Budget—$200,000

Total Request—$200,000

Millwood Lake, Grassy Lake, AR (Section 1135).—An environmental restoration project to 15,000 acres of wetlands located downstream from Millwood Dam. The Dam interrupted the flow and this project would be a water delivery system to include restoring flow to a 400 acre pristine wetland area. It is private land; however, there is a national interest for migratory birds. A potential sponsor is the Arkansas Soil & Water Conservation Commission.

Total Request—$300,000

Southwest Arkansas Study.—Conduct a reconnaissance report in the four county area of the Red River/Little River basins. Included would be the four Corps lakes; DeQueen, Dierks, Gillham and Millwood. The watershed study would evaluate; flooding, irrigation, fish and wildlife habitat, water quality, recreation and water releases for navigation. The State of Arkansas has expressed an interest in cost sharing feasibility study.

Total Request—$300,000

Bois d'Arc Creek, Bonham, TX.—This is a reconnaissance study to address the flooding on 16,100 acres on the lower two-thirds of the basin. The towns of Whitewright and Bonham are within the basin. A dam was determined feasible in the 1960's; however, there was no local sponsor. Currently there are local sponsors interested in this project.

President's Budget—$200,000

Total request—$300,000

Southeast Oklahoma Water Resource Study.—Conduct a reconnaissance study to evaluate the water resources in the study area. The study area includes the Kiamichi River basin and other tributaries of the Red River. A comprehensive plan will be developed to determine how best to conserve and utilize this water.

President's Budget—$200,000

Total Request—$200,000

Big Cypress Valley Watershed (Section 1135).—The main focus of this study is within the City of Jefferson, Texas. Informal coordination with Jefferson has showed their continued support and intent to participate. Their total share is estimated to be $601,600 with annual O&M costs of approximately $21,000.

Total Request—$100,000

CONSTRUCTION

Red River Waterway Project

J. Bennett Johnston Waterway.—Ten projects have been awarded in fiscal year 2000 and need to be completed as well as the initiation of six new projects. Upon implementation of the Project Cooperation Agreement funds will be used for recreation features, as well as continued efforts with mitigation.

President's Budget—$18,040,000

Construction Adds—$5,000,000

Total Request—$23,040,000

Index, AR to Denison Dam, TX; Bendway Weir Demo Project.—This stretch of Red River experiences tremendous bank caving. A demonstration project using this bendway weir technique is needed to determine if this method will work in the Red River. The U.S. Highway 271 bridge was selected due to the threat to this infrastructure and accessibility for evaluation. The project will include bendways 6 miles upstream and 5.5 miles downstream of the bridge. There are environmental enhancement potential with this project.

Total Request—$5,500,000

Red River Basin Chloride Control Project.—A reevaluation for the Wichita River Basin features has been ongoing using reprogrammed funds. The office of the ASA(CW) has approved this and is expected to reprogram funds in fiscal year 2001. In addition to the reevaluation and NEPA process, environmental monitoring activities will continue.

Total Reprogram Request—$1,351,000

Red River Below Denison Dam Levees & Bank Stabilization

Levee Rehabilitation, AR.—Funds are required to complete construction of Levee Item #5 initiated in fiscal year 2000; initiate construction of the next Levee Item and initiate design for the follow on Levee Item. Design and initiate construction of Dillard Revetment downstream extension. An Incorporation Report must be accomplished for Twelve Mile Bayou Levee, Caddo Parish, LA as directed by WRDA 99.

Total Request—$4,000,000

Bowie County Levee, TX.—The local sponsor wants the 'locally preferred option' authorized for construction.

Total Request—$900,000

Upgrade Levees, LA.—Approximately 220 miles of levees do not have gravel surfaces on top of the levee as is the present standard. These levees are in the federal system and must be upgraded. This surface is required for safe inspections of the levees during flood fights and to maintain the integrity of the levee. The total project can be completed in three phases over three years.

Total Request—$2,654,000

Red River Emergency Bank Protection

Arkansas.—Funds are required to complete construction of Hunter's Island Revetment initiated in fiscal year 2000; award contracts for Pleasant Valley and Dickson Revetments; complete the design for Bois D'Arc and initiate design for the next priority item.

Total Request—$10,000,000

Louisiana.—A sediment transport study, Phase II will determine if sediments being transported downstream, into the navigation channel, are increasing the dredging costs. Phase I determined that 1.6 million tons of sand sediment enter the navigation pools each year. Phase II will examine total sediments. There are enough funds on hand to complete this study.

Total Request—$0

Aloha-Rigolette Flood Control, LA.—The local sponsor is expected to contribute more funds than originally anticipated due to the performance and termination of the original contractor. These additional overruns were through no fault of the local sponsor, Town of Colfax, and they can not bear the burden of the additional cost. In addition to federal funding language is required to relieve the Town of Colfax from this extra cost.

Total Request—$286,000

Little River County (Ogden Levee), AR.—A Reconnaissance report in 1991 determined that flood control levees were justified along Little River. The project sponsor, Arkansas Water Conservation Commission requested that the project proceed directly to PED, without a cost shared feasibility study. We request language and funding to accomplish this.

Total Request—$300,000

McKinney Bayou.—The Reconnaissance Report showed a favorable project to clear and reshape this drainage canal. Presently, the local sponsor is unable to cost share continuation of this project.

Total Request $0

OPERATION & MAINTENANCE

Red River Waterway.—The President's budget is sufficient to only operate and perform preventive maintenance items. There are major, unfunded backlog maintenance items that must be done. These items include inspection and certification of lock & dam stoplogs, repairs to tainter gate diagonal bracing and revetment repairs.

President's Budget—$8,907,000

Revetment Repair—$2,500,000

Backlog Maintenance—$3,830,000

Total Request—$15,237,000

We support that O&M at projects be funded at the full Corps capability.

MISSISSIPPI RIVER & TRIBUTARIES (MR&T)

Lower Red River, South Bank Levees, LA.—The Bayou Rapides Flood Control Structure is located in Alexandria, LA and serves to contain flows and reduce interior flooding from high stages of the red River. Without this structure the Federally authorized project could not function properly. We support this MR&T funded project.

President's Budget—$5,739,000

Total Request—$8,239,000.

PREPARED STATEMENT OF THE LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

The Louisiana Department of Transportation and Development, Office of Public Works and Intermodal Transportation, is the agency designated to represent the State of Louisiana in the planning and orderly development of its water resources. This statement is presented on behalf of the State of Louisiana and contains recommendations for fiscal year 2001 appropriations for work in Louisiana under the Mississippi River and Tributaries Project.

Louisiana contains the terminus of the Mississippi River, which has the third largest drainage basin in the world, exceeded only by the watersheds of the Amazon and Congo Rivers. The Mississippi River drains 41 percent, or 1¼ million square miles, of the contiguous United States and parts of two Canadian provinces. All of the runoff from major river basins, such as the Missouri and Upper Mississippi, the Ohio including the Tennessee and others, and the Arkansas and White, flow into the Lower Mississippi, which empties into the Gulf of Mexico through Louisiana.

The jurisdiction of levee boards in Louisiana includes one-third of the State's total area. However, the importance of this one-third of the State can be seen by the fact that it contains nearly 75 percent of the State's population and about 90 percent of the State's disposable personal income. Traditionally, the levee district areas are water rich and have fallen heir to industrial development that ranks high in the nation. It has been estimated that about 60 percent of the State's agricultural products come from levee district areas. So you can see why Louisiana and its twenty levee districts are so interested in seeing the completion of the Mississippi River and Tributaries Project.

In making the following recommendations regarding construction, studies, and some selected operation and maintenance items, the State of Louisiana would hope that Congress and the Administration will honor their prior commitments to infrastructure development and fund our requests.

The following Louisiana projects are only those for which we are requesting an increase to the President's budget. For those Louisiana projects not listed we agree with the President's budget. See the attached "Summary of Recommended Appropriations" for a complete listing.

Operation and Maintenance

	Request
Atchafalaya Basin	$13,582,000
Old River Request	11,320,000
Lower Red River, South Bank Levees (Bayou Rapides Drainage Structure and Pumping Plant)	8,239,000
Mississippi River Levees (total MR&T)	10,000,000
Channel Improvement (total MR&T)	60,000,000

The operation and maintenance of completed works are essential to achieving the full benefits of the projects. In times of budget constraints it is essential that operation and maintenance not be delayed which would hamper the effectiveness of the projects and cause more expensive maintenance at a later date.

The Bayou Rapides Drainage Structure and Pumping Plant Project, located in Alexandria, Louisiana, is authorized under the Lower Red River, South Bank Levees

of the Mississippi River and Tributaries Project. The replacement of an existing pumping plant is needed to contain flows and reduce interior flooding from high stages of the Red River. Additional funds of $2.5 million are needed to continue construction.

All the above listed projects have reached a point where delayed maintenance is now essential and we urge you to fund these projects in the amounts requested.

Mississippi River Levees (total MR&T)—Request: $50,000,000

The Mississippi River and Tributaries Project above Louisiana is about 90 percent complete, but to a much lesser extent in Louisiana. Because of the improvements upstream, increased flows are a major problem in Louisiana where the project is lagging behind the construction in the upper valley. Of the total request for levee construction, $20,072,000 is needed for Louisiana projects. This includes an additional $4,200,000 for the Vicksburg District where there is a deficiency of 4 to 7 feet on mainline Mississippi River levees in the Fifth Louisiana Levee District. It is also requested that Federal funds be provided to purchase rights-of-way for this critical work as the Levee District is in an economically depressed area and does not have a tax base capable of producing the funds necessary for both maintenance and rights-of-way purchase.

Channel Improvement (total MR&T)—Request: $45,000,000

Channel improvement and bank stabilization provide protection to the levees and the development behind them, as well as, preventing unsatisfactory alignment where the river's bank is unstable. The additional funds we are requesting will provide for the dredging and revetment work necessary to accommodate increased flows caused by upstream improvements.

Tensas Basin, Red River Backwater Area (Sicily Island Area Levee Project)—Request: $8,533,000

The budgeted funds for fiscal year 2001 are to be used to continue construction of levee Items 1C and 1D. An additional $6,203,000 is requested to complete Item 1C and 1D, advance the award of Billys and Falcon Bayou and acquisition of lands.

Morganza to the Gulf of Mexico—Request: $5,000,000

Funds are requested to advance preconstruction engineering and design and start construction. This study is scheduled for completion and is expected to be authorized in the next Water Resources Development Act.

Local Contributions for Flood Control Improvements

Historically, Louisiana has always done its part in cooperation with the Federal agencies concerned with flood control. The Louisiana State Board of Engineers, the forerunner of the Department of Transportation and Development, Office of Public Works and Intermodal Transportation, was created in 1879, the same year as the Mississippi River Commission, to coordinate the planning and construction of the required flood control facilities to protect the State. Since that time, local expenditures for flood control have exceeded $730,000,000. This amount adjusted to 1979 dollars represents expenditures in excess of $5.3 billion. Nearly one-half of the potential flooded area of the Lower Mississippi River Valley lies in Louisiana. Local expenditures for flood control have increased with the growth of the valley. This record not only meets, but exceeds any National Water Policy local participation requirement ever put into practice.

CONCLUSION

The Mississippi River and Tributaries Project has been underway since 1928 and isn't scheduled for completion until the year 2031—a date that continually keeps moving further into the future. We understand the need for budget constraints, but the President's budget request of $309,000,000 for the total MR&T Project is not adequate. We endorse the recommendation of the Mississippi Valley Flood Control Association in their request for a minimum of $370,000,000 MR&T budget for funding to the full capability of the Corps throughout the whole valley.

The State of Louisiana, Department of Transportation and Development, Office of Public Works and Intermodal Transportation, in particular, wishes to commend the Appropriations Subcommittees on Energy and Water Development, and express our appreciation for the foresight and understanding exhibited for water resources projects which are vital to the national interest. We solicit your further consideration of the recommendations presented herein.

MISSISSIPPI RIVER AND TRIBUTARIES SUMMARY OF RECOMMENDED APPROPRIATIONS FOR FISCAL YEAR 2001 STATE OF LOUISIANA

Louisiana projects	Budget request	Lousiiana request
Operation and Maintenance:		
Mississippi River Levees (total MR&T)	$6,160,000	$10,000,000
Atchafalaya Basin	9,482,000	13,582,000
Channel Improvement (total MR&T)	58,954,000	60,000,000
Old River Control Structure	4,720,000	11,320,000
Bonnet Carre Spillway	1,340,000	1,340,000
Lower Red River, SBL—Bayou Rapides Drainage Structure & Pumping Plant	5,739,000	8,239,000
Tensas Basin:		
Boeuf & Tensas Rivers	2,384,000	2,384,000
Red River Backwater Area	3,048,000	3,048,000
Atchafalaya Basin, Floodway System, LA	1,499,000	1,499,000
Baton Rouge Harbor—Devil Swamp, LA	210,000	210,000
Bayou Cocodrie and Tributaries	56,000	56,000
Mississippi Delta Region, Caernarvon, LA	916,000	916,000
Construction:		
Mississippi River Levees (total MR&T)	40,621,000	50,000,000
Louisiana State Penitentiary Levee	5,500,000	5,500,000
Atchafalaya Basin	26,000,000	26,000,000
Channel Improvements (total MR&T)	35,690,000	45,000,000
Tensas Basin, Red River Backwater Area	2,330,000	8,533,000
Morganza to the Gulf of Mexico	.....	1,000,000
Atchafalaya Basin, Floodway System	10,000,000	10,000,000
Mississippi Delta Region, Davis Pond	5,000,000	5,000,000
Mississippi & Louisiana Estuarine Area (Bonnet Carre)	100,000	100,000
Preconstruction Engineering & Design: Morganza to the Gulf of Mexico [1]	2,000,000	4,000,000
General Investigations:		
Donaldsonville to the Gulf of Mexico	1,100,000	1,100,000
Alexandria to the Gulf of Mexico	750,000	750,000
Spring Bayou	100,000	100,000

[1] Need WRDA authorization.

Note.—The projects listed above are only those in Louisiana (except where noted) and directly affect the State. We realize that there are other projects in the Valley. We endorse the recommendations of the Mississippi Valley Flood Control Association.

PREPARED STATEMENT OF THE CADDO/BOSSIER PORT COMMISSION

On behalf of the citizens of Northwest Louisiana, the Caddo-Bossier Parishes Port Commission strongly urges the Congress of the United States to allocate in fiscal year 2001 the necessary monies to ensure safe and reliable Red River navigation.

The water resources needs of this nation must be met in order to assure our commerce, international trade and national defense needs are not shortchanged. Our water highways, including the Red River, are national assets. Their ports' activities link every community in our nation to the world. The Port of Shreveport-Bossier, owned and operated by the Caddo-Bossier Port Commission, is part of this waterways network, linking the Ark-La-Tex with the vast midcontinent and coastal and Great Lakes ports.

The Port of Shreveport-Bossier, which lies at the head of Red River navigation, is one of the newest ports in this network, having been in regular operation now only three years. We are proud of its evolution, the impact it is having on the communities it serves and the speed with which the Commission's goals of providing water transportation and economic development are progressing. For example, each year there has been an increase in tonnage over port docks. This spring the One Millionth Ton of Cargo milestone will be reached, a timetable far ahead of many very successful inland ports. And just as importantly, the port is prompting jobs and dollar investment. Oakley Louisiana began operation at the Port in April, 1999 and Omni Specialty Packaging and Omni Terminal Systems will begin operation this

spring. These companies joined Red River Terminals, Shreveport Fabricators, Arch Chemicals and U.S. Liquids at the 2,000 acre Port complex.

Contrary to recent national publicity sparked by a particular political agenda, the facts speak for themselves—the Port of Shreveport-Bossier is a success. Federal investment in civil works programs for the Red River must be adequate to ensure an efficient transportation system, thereby assuring local citizens and private business that their investments in the Port are not only worthwhile today but will be a sound and ongoing investment in the future economic growth of the Ark-La-Tex.

PREPARED STATEMENT OF THE RED RIVER WATERWAY COMMISSION

On behalf of the citizens of the Red River Waterway District of Louisiana, the Red River Waterway Commission urges the Congress of the United States to allocate the funds necessary for fiscal year 2001 for Red River Waterway Project. Adequate funding will allow continued construction progress toward actual project completion, stimulate continued growth in tonnage movement, encourage the continuation of private and public development as well as facilitate total reliability in project function for industrial and recreational development. While this project is still in its infancy stage, the infrastructure investment has been justified by commercial and recreational development along the Red River and intermodal transportation cost savings because of water induced rates resulting from the project.

Tonnage volumes continue to steadily increase and cargo classifications diversify providing numerous business opportunities for this region. Further development will continue to take place with the knowledge that users can rely on an efficient, functional and user friendly river system.

Construction on Red River is over 90 percent complete, however, it is vitally important that we understand the importance of steady progress toward project completion with full knowledge of the financial constraints this country, the President and the Congress are wrestling with during the budget process.

AREAS OF NEED FOR THE RED RIVER WATERWAY PROJECT

Navigation Structures (Revetments and Dikes).—The completion of these structures is necessary to maintain the channel alignment so as to provide reliable navigation to the commercial users. In addition, the structures help insure that barges can be loaded to the maximum depths allowable for profitable operation and continued industrial growth.

Recreation Development.—Design and Construction in Pools 3, 4 and 5 should begin immediately. Important projects such as Shreveport Riverfront, Teague Parkway Trails, Colfax and Hampton Lake establish an excellent recreation foundation.

Operations & Maintenance Program.—Channel Maintenance (Dredging) is critical to the viability of the waterway system. The Corps of Engineers needs sufficient resources to adequately maintain the navigation channel to provide dependable and reliable depths so that barges moving on the system can be loaded to the maximum nine foot draft. Maintenance of existing navigation structures at strategic locations is vital for continued development. The backlog of maintenance items at the lock & dam structures could be devastating to the nation's investment in the navigation system.

Construction/Maintenance Program.—The Corps of Engineers needs resources available to react quickly to landowner bank caving complaints that are a result of the project and are fully justified.

Aids to Navigation.—As commercial use continues to increase, the Coast Guard presence and resources must reflect a similar growth to adequately maintain the buoy system on the Red River and stimulate confidence in the river system.

Mitigation and Bendway Dredging.—Continue with land acquisition and developmental cost analysis associated with the mitigation portion of the project to enhance the bottomland hardwood acreage within the Red River Valley area of Louisiana. Continue the bendway dredging operations to maintain the backwater connection to the channel of Red River for ingress and egress of nutrient rich river water and numerous species of freshwater fish.

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