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AMERICA'S WATER INFRASTRUCTURE NEEDS AND CHALLENGES

HEARING

BEFORE THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS UNITED STATES SENATE

ONE HUNDRED FIFTEENTH CONGRESS

SECOND SESSION

JANUARY 10, 2018

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ONE HUNDRED FIFTEENTH CONGRESS
SECOND SESSION

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AMERICA'S WATER INFRASTRUCTURE NEEDS AND CHALLENGES

WEDNESDAY, JANUARY 10, 2018

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
Washington, DC.

The Committee met, pursuant to notice, at 11 a.m. in room 406, Dirksen Senate Office Building, Hon. John Barrasso (Chairman of the Committee) presiding.

Present: Senators Barrasso, Carper, Inhofe, Capito, Boozman, Wicker, Fischer, Rounds, Ernst, Sullivan, Whitehouse, Merkley, Gillibrand, Markey, and Van Hollen.

Also present: Senator Cassidy.

OPENING STATEMENT OF HON. JOHN BARRASSO, U.S. SENATOR FROM THE STATE OF WYOMING

Senator BARRASSO. Good morning. I call this hearing to order.

Today we are holding a hearing to highlight the importance of passing a new Water Resource Development Act, or WRDA, during the 115th Congress. WRDA is the bill that authorizes funding for the Army Corps of Engineers' Civil Works Program. In order to write good legislation, we must consider the effectiveness of past WRDA provisions, the status of their implementation, as well as our country's future water infrastructure needs.

The Senate Environment and Public Works Committee has jurisdiction over much of our nation's water infrastructure, including locks and dams, inland waterways, and ports. Prior Congresses have traditionally passed WRDAs on a bi-annual basis, going back to—Jim, what, 1986?

Senator INHOFE. Yes.

Senator BARRASSO. Unlike other contentious issues, historically Republicans and Democrat members of the Senate Environment and Public Works Committee have been able to work together and pass WRDA legislation. To put it another way, this is legislation that moves. Regardless of party affiliation, we understand that these kinds of investments are far too important to our economy and security to fall victim to partisan politics.

The members of this Committee represent a diverse group of communities with different needs. Our Committee has members that represent Baltimore, Maryland, and Anchorage, Alaska; Des Moines, Iowa, and Mobile, Alabama; Greybull, Wyoming; Wilmington, Delaware. The citizenry and millions of other Americans expect Congress to do its job by passing WRDA legislation to grow their economies and to keep them safe.

When it comes to rural areas in particular, many communities depend on Corps projects for their existence. Congress must act to make it easier for the Corps to prevent flooding and to modernize levees. We must find better solutions to minimize ice jams, such as those that caused the Big Horn River to flood small, rural communities such as Worland and Greybull, Wyoming. Ice jams are a major public safety concern for towns which can't afford the out of control costs that come with severe flooding.

In Wyoming and other western States, rural communities still face challenges associated with providing long term water supply and storage. Federal water storage facilities out west continue to lose existing space as a result of sediment build up. This is a major problem for western State economies, which have rapidly growing populations, significant ranching and farming communities, and enlarging energy industries. I believe the Corps and the Bureau of Reclamation need to work together to address this challenge.

It is my hope that this Committee will work forward to find solutions in a bipartisan way to meet our country's water infrastructure needs for urban areas as well. Our nation's ports on our coasts and inland waterways are just as vital to the country's economic well being. Goods, commodities, and raw materials from the heartland of America go through these ports for export. In Wyoming, our soda ash—the key component of making glass—gets shipped out of the Port of Portland, Oregon. We all have a vested interest in maintaining these ports, which are vital arteries of commerce.

So I urge my colleagues to work with me in a bipartisan way to find these solutions to the enactment of the WRDA bill in 2018.

With that, I will now turn to the Ranking Member of the Committee for his comments.

Senator Carper.

OPENING STATEMENT OF HON. THOMAS R. CARPER, U.S. SENATOR FROM THE STATE OF DELAWARE

Senator CARPER. Thank you, Mr. Chairman. Thanks very much for pulling this together.

Thanks to all of our witnesses for taking time to share with us. This is a really important issue, and encouragingly, an issue that we might actually be able to work on together and get something done. In past years Senator Inhofe, working with Senator Barbara Boxer, they have been good at showing us how this is done. So hopefully, we won't screw up a good thing. With your help, that will be the case.

I want to say that this is an extremely important authorization that we do about every 2 years. The most recent authorization expires this December. As we all know, coastal issues are extremely important to Delaware. But as the Chairman just said—in what I thought was a very good statement—you don't have to be on a coast; you don't have to be in Massachusetts; you don't have to be in Rhode Island or Delaware in order to have a real strong interest in this issue. It affects us all every day.

Delaware's economic reliance on the Corps' work is not unique. Ninety-nine percent of the U.S. overseas trade volume—over 99 percent—moves through coastal channels that the Corps maintains. Additionally, the Corps' inland waterways and locks form a

freight network. Think of it, if you will, as a water highway, connecting waterways and ports and providing direct access to international markets. They also serve as critical infrastructure for the U.S. military.

In addition to navigation, the Corps of Engineers also works to reduce the risk to human safety and property damage from flooding. Flooding alone currently costs the United States billions of dollars annually.

As the 2017 hurricane system illustrated, our nation needs to be a resilient one that is ready for the next storm or flood or drought event. Because they are coming. In fact, just this week, we were told by NOAA, the National Oceanic and Atmospheric Administration, they announced that in 2017, total costs for extreme weather and climate events exceeded $300 billion. If that seems like a lot of money, it is. That is a new annual record in the U.S. So it is clearly not a matter of if the next extreme weather event is coming; it is just a matter of when.

Together, the Corps' navigation and flood risk management activities account for more than 70 percent of the agency's annual civil works appropriation. But the Corps has or shares jurisdiction over many other critical civil works programs as well, including environmental stewardship, hydropower, recreation, emergency management, and water supply.

Unfortunately, in the mid-1980s, Federal funding for new project construction and major rehabilitation began to steadily decline. With this trend, the Corps' actions have shifted to operations, to maintenance, to rehabilitation of existing infrastructure, and a backlog of deferred maintenance has continued to grow ever since.

As a result, much of the Corps' infrastructure is now exceeding its useful lifespan.

We have a couple of graphics here. I am looking here at one Christine is holding up for us. It was provided by our friends from the American Association of Port Authorities; a busy chart, but a good one, nonetheless. Everybody should have it at your desk, a copy of this. About $66 billion in investment in port related infrastructure is needed over the next decade to ensure U.S. job creation and economic growth; over $66 billion in investment in port related infrastructure is needed over the next 10 years to ensure that the U.S. job creation and economic growth continues.

We have another graphic also provided by the American Association of Port Authorities. As this graphic shows, investment in our freight network, which is an interconnected network of ships, barges, trucks, and trains, is essential to the safe and efficient movement of goods, both into and out of the United States. This freight network serves as the backbone of our economy; it is not just ships; it is not just barges; it is not just trains; it is not just trucks; it is all of the above and more.

With respect to flood damage risk, the American Association of Civil Engineers Infrastructure Report Card tells us an unsettling story, with dams and levees and inland waterways grading out at a D, receiving a grade of D. Deplorable. Representing an overall cumulative investment backlog of nearly $140 billion and an authorized but unconstructed portfolio of another $60 billion.

The Corps faces a sizable math problem as they try to service that roughly $200 billion—if you have the $140 billion and add that to the $60 billion requirement, and more. Match that up, if you will, with an annual budget that hovers around $4.6 billion. The math just doesn't work, does it?

Clearly, we have a lot of important work to do. We need to work in a bipartisan fashion, if we are to really address these concerns and build consensus on a path forward, in a smart, cost efficient way, leveraging both green as well as gray infrastructure solutions.

Again, Mr. Chairman, thank you for holding this important hearing. We all look forward to hearing from our witnesses.

I want to submit for the record these letters of acclaim for the newest member of our Committee.

[Laughter.]

Senator CARPER. I just want to say, Chris, welcome aboard.

Senator VAN HOLLEN. [Remarks made off microphone].

Senator CARPER. Senator Harris came up to me yesterday at the Caucus lunch and she said, "I'm moving off your Committee." I said, "I know, we are sorry to hear that." She said, "It's not because I'm not interested in the issues, I'm keenly interested in the issues and very much want to be part of your extended family." I thought we could work that out.

But for an attorney general, somebody that is going to be on the Judiciary Committee, if you can get there, I think it is a good thing for her. She will still be part of our team.

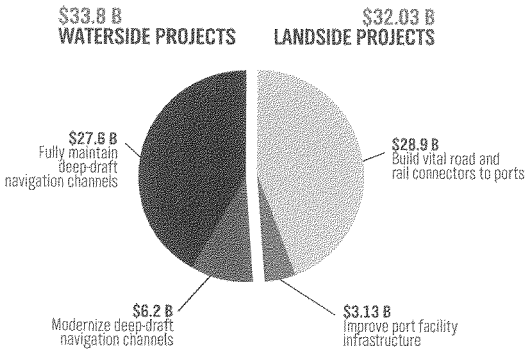
Thanks very much.

[The referenced information follows:]

Building America's 21st Century Seaport Infrastructure

For job creation and economic growth

$66 BILLION INVESTMENT NEEDED FOR PORT RELATED INFRASTRUCTURE



What's at risk without adequate investment in U.S. seaport infrastructure?

$4 trillion
potential GDP loss by 2025

$575 billion
cost to American businesses and households by 2025

$14 billion
added cost of traded products due to shallow harbors by 2040

$3,400
loss per household by 2025

$155 billion
amount ports and their private sector partners will invest between 2016 and 2020

Growing trade in America requires investment in our nation's infrastructure to meet thedemand for safe, efficient movement of freight. These investments create jobs and economic growth. Ports have identified $66 billion necessary for port-related infrastructure over the next 10 years. It's time to invest to Keep America Moving.

@seaportsdeliverprosperity

@AAPA_Seaports

www.aapa-ports.org/movingamerica

AAPA American Association of Port Authorities

1010 Duke Street · Alexandria, VA · 22314-3589
703.684.5700 · aapa-ports.org

ILLUSTRATIVE EXAMPLES OF PORT-RELATED INVESTMENT NEEDS

LEGEND:
INFRASTRUCTURE PROJECTS BY TYPE

- BRIDGE
- RAIL
- ROAD
- TUNNEL
- MULTIMODAL
- WATERSIDE DEEPENING
- MODERNIZATION

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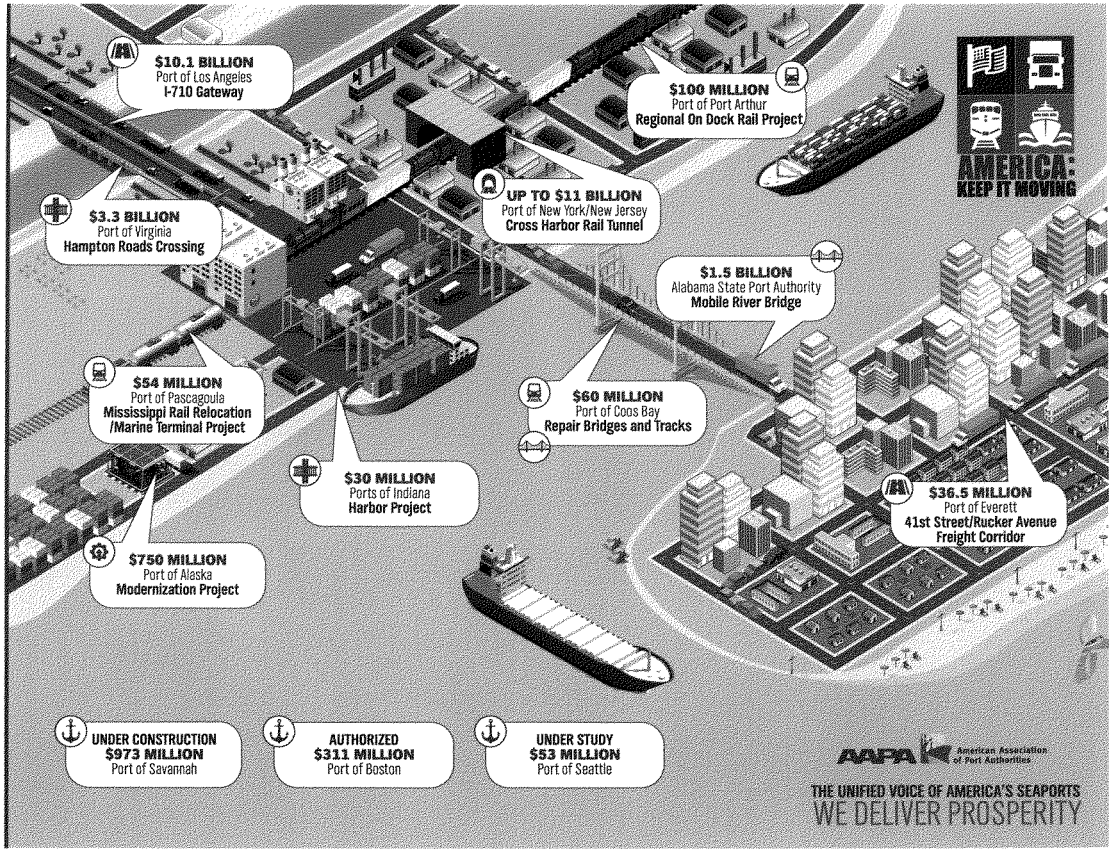


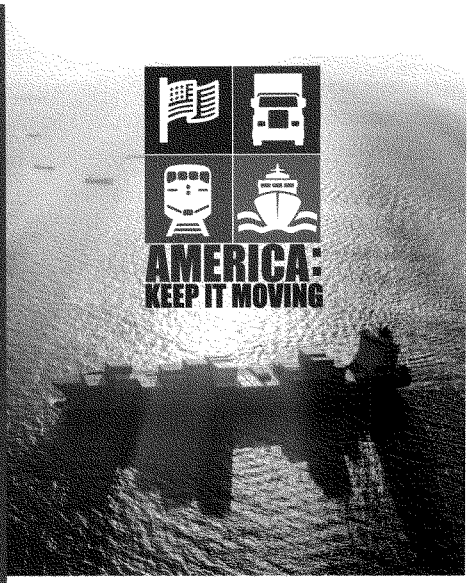
23 MILLION
AMERICAN JOBS
SUPPORTED BY SEAPORTS

$6 BILLION+
VALUE OF GOODS HANDLED BY SEAPORTS EACH WEEKDAY

$321 BILLION
A YEAR IN TAX REVENUE GENERATED BY PORT ACTIVITY

$4.6 TRILLION
VALUE OF ECONOMIC ACTIVITY RELATED TO SEAPORTS ANNUALLY

$66 BILLION
NEEDED FOR PORT-RELATED INFRASTRUCTURE OVER THE NEXT 10 YEARS



American seaport activity supports 26 percent of the economy.
Seaports serve a vital role in supporting U.S. jobs, economic prosperity, international competitiveness and tax revenue. Seaports are economic engines and vital freight gateways to the global marketplace for American farmers, manufacturers and consumers, and serve as critical infrastructure for the U.S. military.

As the unified voice of American seaports, the American Association of Port Authorities (AAPA) is working to make seaports a key priority for policymakers considering plans for investment in U.S. infrastructure.

To learn more about how ports keep America moving, scan the QR Code or visit:
aapa-ports.org/movingamerica

Building America's 21st Century Seaport Infrastructure
For job creation and economic growth

AAPA American Association of Port Authorities

$66 billion needed over the next decade for port-related infrastructure to ensure U.S. job creation, economic growth and tax fairness

The amount of freight moved in the U.S. is projected to grow 15 percent by 2045, and America's trade volume is expected to quadruple after 2030. By 2037, the U.S. will export more than 52 million shipping containers through U.S. seaports each year. We must prepare the nation's infrastructure to meet a growing demand for the safe, efficient movement of freight – American jobs are at stake.

What's at risk without adequate investment in U.S. seaport infrastructure?

$4 trillion
potential GDP loss by 2025

$575 billion
cost to American businesses and households by 2025

$14 billion
added cost of traded products due to shallow harbors by 2040

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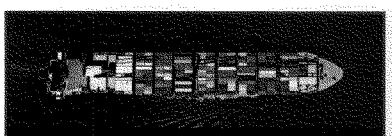

WATERSIDE
$33.8 BILLION FOR INVESTMENTS TO:

MAINTAIN DEEP-DRAFT NAVIGATION CHANNELS
$27.6 BILLION NEEDED
- $18. 6 billion for full use of annual Harbor Maintenance Tax (HMT) revenues, including increasing donor equity
- $9 billion to use the HMT surplus to address the chronic maintenance backlog
- Restore tax fairness to the HMT

MODERNIZE DEEP-DRAFT NAVIGATION CHANNELS
$6.2 BILLION NEEDED
- $3.1 billion for federal share of 15 current congressionally authorized construction channel improvements
- $3.1 billion for federal share of projects undergoing feasibility studies

LANDSIDE
$32.03 BILLION FOR INVESTMENTS TO:

BUILD VITAL ROAD AND RAIL CONNECTORS TO PORTS
$28.9 BILLION NEEDED
- Provide robust funding for federal programs to modernize landside port connectors, including DOT TIGER, FAST Act state formula funds and FASTLANE grants

IMPROVE PORT FACILITY INFRASTRUCTURE
$3.13 BILLION NEEDED
- Provide $1.25 billion annually to the U.S. DOT TIGER program, with 25 percent dedicated to port related infrastructure

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Senator BARRASSO. We would like to welcome Senator Van Hollen to the Committee. We now, with you and Senator Cardin, and since my mom grew up in Maryland working in Dundalk, Maryland, a summer job, I can tell you with two of you from Maryland and this history, that now we can make sure that the Chesapeake Bay is fully protected. I know that is an issue.

Senator VAN HOLLEN. Mr. Chairman, I will say no more.

[Laughter.]

Senator BARRASSO. Welcome to the Committee.

We are now going to hear from our witnesses. We are going to start with an introduction in a second from Senator Inhofe.

We have Mr. Scott Robinson; we have Ms. Julie Ufner, who is the Associate Legislative Director of the National Association of Counties. We have Mr. William Friedman, who is the Chairman-Elect of the American Association of Port Authorities; Ms. Nicole Carter, the Natural Resources Policy Specialist for the Congressional Research Service; and Mr. Steven Cochran, who is the Associate Vice President for Coastal Protection, Restore the Mississippi Delta Coalition.

And I believe Senator Cassidy is going to be here in a few moments to introduce Mr. Cochran.

But if I could start by asking Senator Inhofe to please introduce our guest.

Senator INHOFE. Thank you, Mr. Chairman. I appreciate that, and also having the presence of Scott Robinson here. He has spent a lot of time in this business, and we have become good friends.

I have to say one thing, though, building a little bit on what Senator Carper just said. It is not just the coastal States that we are interested in. We are, in Oklahoma, America's most inland warm water port. Now, the problem is, nobody knows it. And I remember back when I was in the State Senate, many years ago—in fact, it was back in the 1970s—we conceived something that we thought, we are going to tell the whole world that we are navigable in Oklahoma.

So the World War II submarine veterans came in, we worked out a deal. They said, if you can procure a submarine, we have figured out a way to get it all the way up from Texas to Oklahoma. Now, we are talking about a submarine, the USS *Batfish*, it was the length of a football field, a huge thing. And all my adversaries were saying, we are going to sink Inhofe with his submarine.

Nonetheless, we got it up there, and there it is, in your port, Port of Muscogee, a 300 foot submarine that shows the world that we are in fact an inland port.

So Scott, it is nice to have you here. You have a tremendous background there. You have been at the Port of Muscogee for 28 years now, with more than 1,000 acres of land within the jurisdiction of the Port that is poised to continue its growth and provide several transportation options for Oklahoma industries.

Scott has been active in the waterway communities, serving on a variety of related boards and commissions, including the National Waterways Conference, the Marine Transportation System, National Advisory Council, Arkansas-Oklahoma Port Operators Association. So it is great to have you here. You bring a lot of knowledge to this meeting, and I appreciate it.

Mr. ROBINSON. Thank you very much, Senator Inhofe, for that introduction. It is good to see you. I could spend my 5 minutes talking about stories about you, but I won't do that.

Senator BARRASSO. We will extend your opportunity.

[Laughter.]

Senator BARRASSO. Don't feel limited to 5 minutes if you are going to talk about him.

But I do want to remind all the witnesses that your full testimony will be made part of the official hearing records, and except for Mr. Robinson, I would ask you please to keep your statement to 5 minutes, so that we will have time for questions.

Mr. Robinson.

STATEMENT OF SCOTT ROBINSON, PORT DIRECTOR, MUSCOGEE CITY-COUNTY PORT AUTHORITY

Mr. ROBINSON. Chairman Barrasso, Ranking Member Carper, members of the Committee, it is an honor and a privilege to testify before you here today about America's infrastructure needs and the importance of WRDA 2018. Thank you for this opportunity to contribute my thoughts.

I am, as Senator Inhofe said, Scott Robinson, Port Director, Port of Muscogee. I have been there since 1990. The Port of Muscogee is one of two public ports in Oklahoma and one of five in Oklahoma and Arkansas.

I commend the Committee for the work it has accomplished through 2014 and 2016 WRDA legislation. As I hope to illustrate further in my testimony today, the absence of regularly enacted WRDA legislation during the period 2001 through 2013 caused serious harm to an important infrastructure development project along the McClellan-Kerr Arkansas River Navigation System, which in the interest of time I will refer as NKARNS. The NKARNS is a 445 mile, multi-purpose waterway that runs through Arkansas and Oklahoma. Completed in 1970 at a cost of $1.2 billion, it was the largest Federal investment ever made in a civil works project, connecting the two States—Oklahoma and Arkansas—with domestic river ports and terminals along the inland waterways of the United States and with ports all over the world via the Port of New Orleans and the Gulf of Mexico.

In 2015 there was a regional impact study for the NKARNS conducted and published, documenting the impacts, $8.5 billion in sales, 55,000 jobs, $289 million in taxes to the national economy. You will find a copy of that in Attachment A to my testimony. At Attachment D you will find a letter signed by the President of the Arkansas-Oklahoma Port Operators Association, endorsing its priorities for the NKARNS. You will find my briefing that we made to the Congress and to stakeholders and congressional staffers in Attachments B and C.

I would like to take a few minutes to talk about three infrastructure priorities for the NKARNS, and in doing so, hopefully give this Committee a glimpse of waterway infrastructure needs of the nation. No. 1 priority was modification of an existing structure, the Molenda structure. Near the confluence of the NKARNS and the Mississippi River, the Arkansas River and the White River are trying to come together. Every time it floods, the Corps has to spend

money trying to fix the problem. Failure is imminent, and a solution is imperative.

The prominent solution to the problem will soon come out of a Corps study now in progress, that is cost shared by the State of Arkansas. Once the study is completed, and the chief's recommendation is issued, the Molenda structure will face new start and cost share hurdles. Until then, the NKARNS is at risk of failure.

No. 2, backlog of critical maintenance. There is a serious and growing backlog of deferred maintenance on the NKARNS, $143 million of which is deemed critical by the Corps of Engineers. The Corps defines critical maintenance as having a 50 percent chance of failure within 5 years.

In March 2017 there were 42 such critical maintenance items on the NKARNS. More alarming than that, the critical backlog is growing rapidly. In his testimony to this Committee in 2016, Tulsa Port of Catoosa's Director Bob Porter expressed concern that the critical backlog had reached $70 million. So that is twice as much today.

The problem on the NKARNS is no different than the problem faced all across the nation. In order to spread too little funding too far, we are fixing critically important infrastructure as close to failure as possible, and in some cases after it fails and on an emergency basis. This is not an acceptable asset management strategy. It is a prescription for failure.

No. 3 was the 12 foot channel and the vacuum created by the absence of regularly enacted WRDA legislation before 2014 and 2016 WRDA. Congress, in Section 136 of the Energy and Water Development Appropriations Act of 2004, authorized the deepening of the NKARNS from 9 to 12 feet. In the 2005 Energy and Water Development Appropriations Act, $7 million was appropriated for the channel deepening; $5.5 million was used in 2006 for design and construction activities, which reduced the $172 million estimated project cost by a like amount. In 2009 the Corps expressed a $49 million capability, but it never ended up in the President's budget.

In Oklahoma we call this the WEWOKA switch. I don't have time to explain. Suffice to say, being lost in the WEWOKA switch is not good. The Committee can rescue the 12 foot channel and resolve the new start dilemma by including clarification language in WRDA 2018 as follows: Congress finds that the initial funding was provided and construction started on a 12 foot navigation channel of the McClellan-Kerr Arkansas River Navigation System, as directed in Section 136 of the Energy and Water Development Appropriations Act, thereby meeting the new start requirements.

In conclusion, according to the Institute of Water Resources, from 2010 through 2012, the Civil Works Program of the United States Army Corps of Engineers provided an annual estimated national economic development net benefit of $87 billion and stimulated $27 billion in returns to the U.S. Treasury. Sixteen to one returns in terms of economic benefits and five to one return in revenue to the Treasury. Waterways investment is a wise investment.

If there is finally going to be a comprehensive infrastructure reinvestment plan, then my plea on behalf of NKARNS stakeholders is that it not be just for roads and bridges, but for waterways, too.

Not just for deep draft coastal ports and harbors, but inland waterways as well, together with modern, multi-modal connections, truck and rail, for efficient, competitive movement of freight.

To the extent waterway projects are favorably considered in such an infrastructure reinvestment plan and require private investment as leverage, then the Water Infrastructure Finance and Innovation Act Program, created in WRDA 2014, may be just the tool necessary to track such investment in projects for which the Inland Waterway Trust Fund Revenues are not sufficient to share.

Thank you again for the opportunity to testify. I would be happy to answer any questions you may have.

I realize I have gone over my time. If you want me to tell some of those stories, I will.

[Laughter.]

[The prepared statement of Mr. Robinson follows:]

Scott Robinson
Port Director for the Port of Muskogee, OK

Scott Robinson is the Port Director for the Port of Muskogee. His primary responsibility is the management and development of the Port of Muskogee, located in Muskogee, Oklahoma at the headwaters of the Arkansas River portion of the McClellan-Kerr Arkansas River Navigation System and 53 miles downstream of the Tulsa Port of Catoosa, head of navigation for the waterway. Scott has been employed in this position since 1990.

As a strong advocate for waterways, Scott has devoted time and effort to developing innovative ways to use waterborne transportation to help his community and region reach new heights and work to ensure the system is properly funded and operational at all times. Under his direction, the Port carries out the industrial development effort of the City of Muskogee.

Scott has served as a member and officer, including Chairman of the Arkansas Oklahoma Port Operator's Association, the Arkansas Basin Development Association, the Oklahoma Department of Transportation Waterways Advisory Board and the National Waterways Conference. Scott has served on various other waterway organizations including the Inland Rivers, Ports and Terminals Association. The Montgomery Point Lock and Dam Coalition and the Marine Transportation System National Advisory Council. Scott remains active in the local and state community, serving on a number of boards and commissions. He was appointed by Governor Fallin as co-chair of the Oklahoma Port Task Force which was charged with developing a comprehensive plan to accommodate the added burden of Oklahoma ports, roads and bridges resulting from the opening of the expanded Panama Canal.

Prior to becoming Port Director, Scott spent seventeen years as an independent oil and gas producer with exploration and production operations in Oklahoma and Texas. He was an active member of the Oklahoma Independent Petroleum Association and the Independent Petroleum Association of America.

Scott is a graduate of the University of Oklahoma. He is married to Julie and they have five children and five grandchildren.

Testimony of

Scott Robinson, Port Director

Port of Muskogee

5201 Three Forks Road

Fort Gibson, Oklahoma 74434

P.O. Box 2819

Muskogee, Oklahoma 74402

Before the

Committee on Environment and Public Works

United States Senate

Hearing on

"America's Water Infrastructure Needs and Challenges"

Wednesday, January 10, 2018

10:00 A.M. EST

Room 406

Dirksen Senate Office Building

Chairman Barrasso, Ranking Member Carper, and Members of the Committee, it is an honor and a privilege to testify before you today concerning America's Water Infrastructure Needs and Challenges and the importance of passing a Water Resources Development Act in 2018. Thank you for the opportunity to contribute

my thoughts on behalf of Oklahoma and Arkansas stakeholders about this very important topic.

I am Scott Robinson, Port Director at the Port of Muskogee, one of Oklahoma's two public ports, the other being the Tulsa Port of Catoosa, which is located 53 miles upstream of the Port of Muskogee and at the head of navigation on the McClellan-Kerr Arkansas River Navigation System. There are three public ports in Arkansas, as well, located in Fort Smith, Little Rock and Pine Bluff; and, there are numerous private ports in both states. I have had the good fortune of working on behalf of the Port and waterway since 1990 so I have a fair understanding of the infrastructure needs and challenges of waterway stakeholders – the states, the cities, the counties, public and private port and terminal operators, farmers, manufacturers, energy producers and families – whose fortunes are tied to the waterway.

I commend the Committee for the work it has accomplished through 2014 and 2016 WRDA legislation. As I hope to illustrate further in my testimony today, the absence of regularly enacted WRDA legislation during the period 2001 and 2013 was troubling, created tension among the nation's waterway stakeholders and, in one particular case, may have caused serious harm to an important infrastructure development project along the McClellan-Kerr Arkansas River Navigation System, which, in the interest of time and tongue-tied-ness, I will refer to as the MKARNS.

The MKARNS is a 445-mile, multi-purpose waterway that runs through Arkansas and Oklahoma. Authorized in 1946, construction of the MKARNS was completed in 1970 at a cost of $1.2 billion which, at that time, was the largest federal investment ever made in a civil works project, connecting the two states with domestic river ports and terminals along the Nation's 12,000 miles of inland waterways and with ports around the world via the Gulf of Mexico. The federal investment was justified by the expectation that the benefits to the Nation, discounted over time, would exceed the cost – a threshold that applies to all congressionally authorized waterway projects. By all accounts, the national benefits of the MKARNS - i.e., transportation cost savings attributable to navigation, flood damages prevented, hydro-electric power generated, municipal and industrial water supply, recreation and conservation of natural resources - have proven the $1.2 billion to be a wise investment.

Along with my colleague, David Yarbrough, Port Director of the Tulsa Port of Catoosa, who is with me here today, and his predecessor, Bob Portiss, I have, on many occasions, talked with anyone who would listen about the economic impacts of the waterway - in particular, the impacts along the 53 miles of waterway between Catoosa, OK and Muskogee, where more than 85 industries are located, that have invested more than $5 billion in their facilities and created 8,000 quality jobs with a combined annual payroll of $320 million. In rural Oklahoma, these are impressive impacts. In 2015, a Regional Economic Impact Study for the MKARNS was published, and the impacts of the entire system in Oklahoma and Arkansas were documented. The Study, which was funded by the Arkansas State Highway and Transportation Center, and conducted in conjunction with the Arkansas Waterways Commission, the Oklahoma Department of Transportation and the University of Arkansas at Little Rock, found that the MKARNS contributes total impacts of $8.5 billion in sales, 55,872 jobs and $289 million in taxes to the national economy. You will find the executive summary of the Study in Attachment A to my testimony.

In Attachment B, you will find a letter signed by the President of the Arkansas Oklahoma Port Operators Association (AOPOA), endorsing its priorities for the MKARNS. The endorsement was delivered by the AOPOA leadership team to members of the Oklahoma and Arkansas Congressional delegations this past November. As presented in a briefing to congressional staffers from Oklahoma, Arkansas and Kansas on November 13, 2017, the three priorities are: 1. Modification to the Melinda Structure; 2. Backlog of Critical Maintenance; and, 3. 12-foot Channel. Priorities 1 and 3 require 50% cost-share. Priority 2 is a 100% federal responsibility. You will find a copy of the briefing in Attachment C.

I would like to take a few minutes to talk about these infrastructure priorities for the MKARNS; and, in doing so, give this Committee a glimpse of the waterways infrastructure needs of just one segment of the nation's inland waterway system.

Modification of the Melinda Structure. Near the confluence of the navigation system and the Mississippi River, the Arkansas River and the White River have come closer and closer together during flooding events. Failure of the Melinda Structure is imminent. Expensive repairs have been made to the structure on numerous occasions. The permanent solution to the problem will soon come out of

a Corps study, now in progress and cost-shared by the State of Arkansas. Once the alternative response actions are narrowed to a final recommendation and a Chief's report is issued, modifications to the Melinda Structure will face new start and cost-share hurdles. Until then, the MKARNS is at risk of failure. If and when the two rivers come together, the navigation pool will be lost.

Backlog of Critical Maintenance. There is a serious and growing backlog of deferred maintenance on the MKARNS, $143 million of which is deemed critical by the Corps of Engineers. The Corps defines critical maintenance as those non-routine maintenance items that have a 50% chance of failure within 5 years. In March, 2017, there were forty-two such maintenance items on the MKARNS. Even more alarming, the critical backlog is growing rapidly. In his testimony to this Committee in 2016, Tulsa Port of Catoosa's Port Director, Bob Portiss, expressed concern that the critical backlog had reached $70 million.

The problem on the MKARNS is no different than the problems faced across the Nation with respect to deteriorating infrastructure. In order to spread too little funding too far, we are fixing critically important infrastructure as close to failure as possible and, in some cases, after it fails and on an emergency basis. As everyone knows, this is not an acceptable strategy. It's a prescription for failure. On the inland waterways, emergency response to such failures result in: unscheduled lock closures; increased cost to shippers and to taxpayers; foregone benefits to the Nation and to the states, including loss of revenue to the U.S. treasury; and, lack of transportation network reliability which is a serious deterrent to growth of waterborne commerce and the efficient use of the Nation's transportation network, already under stress.

This Committee is to be commended for its 2016 WRDA legislation, authorizing the Corps to accept and use materials, services or funds contributed by a non-federal public or private entity for the purpose of repairing, restoring, replacing or maintaining a water resources project if the District Commander determines that there is a risk of adverse impacts to the functioning of the project for the authorized purposes of the project and that acceptance of the materials, services or funds is in the public interest. Now, stakeholders can work with the Corps to prevent failure or to respond to failure in a timely manner when it occurs. In September of 2017, implementation guidance for Section 1153 of 2016 WRDA was issued. A copy of

the guidance can be found in Attachment D to my testimony. As you might expect, the guidance is full of legal requirements for the non-federal entity and for the Corps which hamstrings the non-federal entities' ability to make the contribution. Stakeholders are just beginning to work through the mechanics of this guidance with the Tulsa and Little Rock Districts.

12-Foot Channel. As mentioned earlier in my presentation, in the vacuum created by the absence of regularly enacted WRDA legislation, the Congress authorized the deepening of the MKARNS from 9-feet to 12-feet in Section 136 of the Energy and Water Development Appropriations Act of 2004. In the 2005 Energy and Water Development Appropriations Act, $7 million was appropriated for the deepening. Of the funds appropriated, $1.5 million was used to complete the feasibility study to determine the economic feasibility, technical soundness and environmental impacts of deepening the existing navigation channel to 12-feet. The feasibility report was approved in 2005. The remaining $5.5 million was used in 2006 for design and construction activities, and reduced the $172,062,000 estimated project cost ($86,031,000 federal share and $86,031,000 Inland Waterway Trust Fund share) by a like amount. A significant portion of the funds were used for mitigation of the environmental impacts of the deepening. In 2009, the Corps reported a capability of $40 million for construction but this was not included in the Presidents FY 2009 Budget and hasn't been in subsequent budgets to date, apparently because the Office of Management and Budget doesn't consider the deepening to have started; therefore, subject to the moratorium on new starts which was only recently lifted. In Attachment E, you will find a Little Rock District Issue Paper, summarizing the referenced financial data.

In Oklahoma, we call this the Wewoka Switch. I don't have time to explain. Suffice to say, it's not an endearing term.

Arkansas Governor Asa Hutchinson and Oklahoma Governor Mary Fallin have each recognized the importance of the 12-Foot Channel in letters to the White House as one of the shovel ready infrastructure projects benefitting the two states and the Nation for consideration as part of a national infrastructure investment plan.

This Committee can resolve this new start dilemma. On behalf of MKARNS stakeholders, I respectfully request clarification language in WRDA 2018 regarding MKARNS as follows:

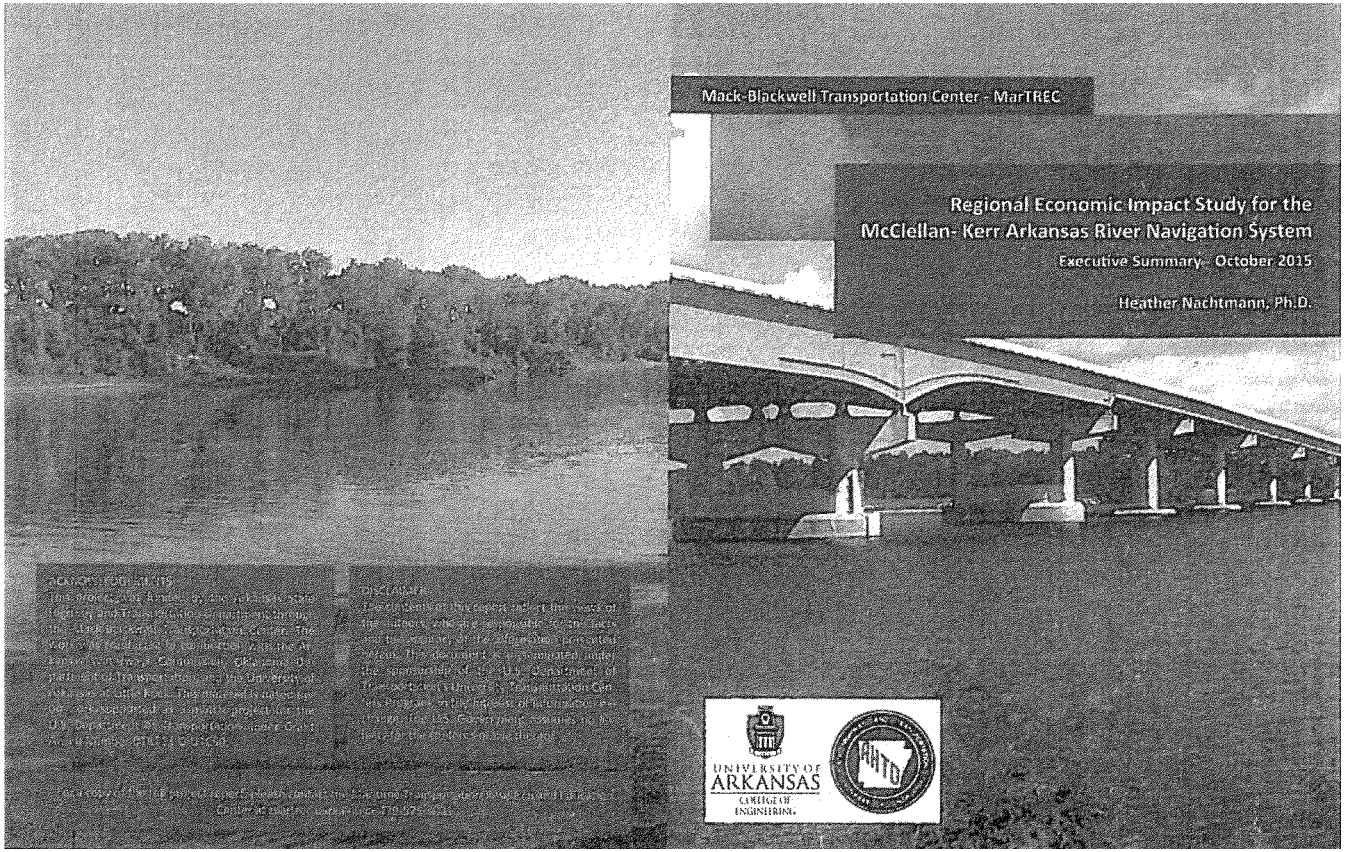
> Congress finds that initial funding was provided and construction started on a 12-foot navigation channel of the McClellan-Kerr Arkansas River Navigation System as directed in Section 136 of the Energy and Water Development Appropriations Act, 2004 (Public Law 108-137, thereby meeting new start requirements.

In conclusion, according to the Institute for Water Resources, from 2010 through 2012, the Civil Works Program of the U.S. Army Corps of Engineers provided an annual estimated National Economic Development net benefit of $87 billion and stimulated $27 billion in returns to the U.S. treasury – a 16:1 return in terms of economic benefits and a 5:1 return in revenue to the treasury. Waterways investment is a wise investment. If there is going to be an infrastructure reinvestment plan of the magnitude talked about, then my plea, on behalf of MKARNS stakeholders, is that it not be just for roads and bridges but waterways too. Not just for deep draft coastal ports and deep draft harbors but inland waterways as well, together with modern multi-modal connections, truck and rail, for efficient competitive movement of freight. To the extent waterway projects are favorably considered in such an infrastructure reinvestment plan, and require private investment as leverage, then the Water Infrastructure Finance and Innovation Act program, created in WRDA 2014 may be just the tool necessary to attract such investment in projects for which the Inland Waterway Trust Fund revenues are not sufficient to cost-share.

Thank you again for the opportunity to testify. I would be happy to answer any questions you may have.

ATTACHMENT A

REGIONAL IMPACT STUDY FOR THE McCLELLAN-KERR ARKANSAS RIVER NAVIGATION SYSTEM – EXECUTIVE SUMMARY


Mack-Blackwell Transportation Center - MarTREC
Regional Economic Impact Study for the
McClellan- Kerr Arkansas River Navigation System
Executive Summary - October 2015
Heather Nachtmann, Ph.D.
UNIVERSITY OF
ARKANSAS
COLLEGE OF
ENGINEERING

Executive Summary

The McClellan-Kerr Arkansas River Navigation System contributes total impacts of $8.5 billion in sales, $289 million in taxes, and 55,872 jobs to the national economy.

The McClellan-Kerr Arkansas River Navigation System (MKARNS), located in Oklahoma and Arkansas, contains 445 miles of waterway and is a crucial part of the United States' transportation system. The MKARNS strategically connects the heartland of the United States with the rest of the world via the Mississippi River and Port of New Orleans. We investigate the regional economic impacts of the MKARNS in order to inform waterway stakeholders of the system's value.

Our study considers multiregional economic impacts from hydropower energy generation, USACE O&M expenditures, private sector investment expenditures, port activities, shippers' activities, transportation cost savings, and recreation benefits related to the MKARNS. Our findings show the MKARNS contributes total impacts of $8.5 billion in sales, 55,872 jobs, and $289 million in taxes to the national economy. The findings of this study can inform future MKARNS investment decisions resulting in sustainable growth in the regional and national economies.

This executive summary contains results from two parallel studies, MBTC 4001 Regional Economic Impact Study for the McClellan Kerr Arkansas River Navigation System project report (Nachtmann, et al., 2015) and Final Report FHWA-OK-14-16 (Robinson, et al., 2014).

55,872 jobs

445 navigable miles

$8.5 billion in sales impacts

11.7 million tons

As much freight as 221,896 trucks or 57,693 railcars

Tax impacts of $289 million

Contacts and Acknowledgements

Project Reports

This executive summary is based on the work published in final report, Regional Economic Impact Study for the McClellan Kerr Arkansas River Navigation System, prepared in October 2015 for the Maritime Transportation Research and Education Center of the Mack-Blackwell Transportation Center at the University of Arkansas. The full report can be obtained at martrec.uark.edu or 479-575-6021.

The Oklahoma segment MKARNS results and multiregional variable input-output model utilized in this work are attributed to the November 2014 Oklahoma Department of Transportation final report, FHWA-OK-14-16 Regional Economic Impact Study for the McClellan-Kerr Arkansas River Navigation System, conducted by Robinson, et al. of the University of Arkansas at Little Rock.

Acknowledgements

I would like to recognize the dedication and participation of many individuals, without whom this research would not be possible. I am grateful to the Arkansas State Highway and Transportation Department for their financial support and cooperation. I sincerely thank my research assistants, Furkan Ortanriseven and Othman Boudhoum, who actively participated in every step of this research. I would also like to recognize Dennis Robinson's team consisting of Geoffrey Joseph, Melody Muldrow, and Vaughan Wingfield. I benefitted greatly from the efforts and dedication put forth by Gene Higginbotham, Executive Director of the Arkansas Waterways Commission, Deidre Smith, Waterways Branch Manager of the Oklahoma Department of Transportation, and Tyler Henry, Regional Economist of the Army Corps of Engineers-Tulsa District.

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(501) 682-1176

UNIVERSITY OF ARKANSAS COLLEGE OF ENGINEERING
MACK-BLACKWELL TRANSPORTATION CENTER

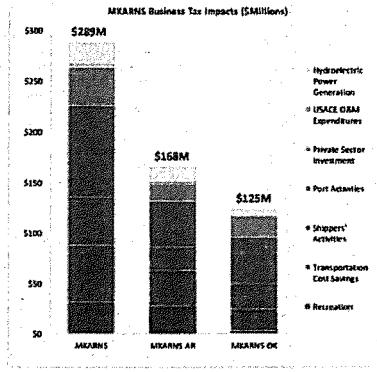
MarTREC
Maritime Transportation Research & Education Center

MKARNS Tax Impacts

We investigated the direct and indirect impacts of MKARNS operations on Business Taxes including taxes on sales, property, and production.

The total nationwide impact of the entire MKARNS operations on Business Taxes is $289 million. On its own, the Arkansas segment of the MKARNS nationally contributes $168 million, and while the Oklahoma MKARNS segment nationally contributes $125 million. The combined impact is slightly less than the two segment impacts combined due to shared freight benefits.

Examining the MKARNS Business Tax impacts, we observe Port Activities and Transportation Cost Savings are the largest contributors to Business Tax impacts.



	Business Taxes ($ Million)		
Benefits	MKARNS	MKARNS-AR	MKARNS-OK
Hydroelectric Power Generation	$23	$15	$8
USACE O&M Expenditures	$4	$3	$1
Private Sector Investment	$38	$17	$21
Port Activities	$90	$46	$46
Shippers' Activities	$48	$23	$25
Transportation Cost Savings	$56	$35	$22
Recreation	$32	$28	$3
Total Impact	$289M	$168M	$125M

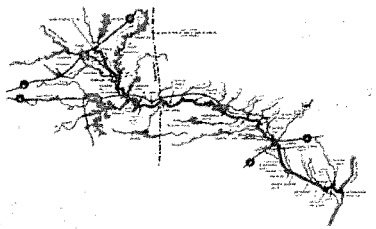
McClellan-Kerr Arkansas Navigation System (MKARNS)

The McClellan-Kerr Arkansas Navigation System (MKARNS) is a 445 mile navigation system originating from the Tulsa Port of Catoosa and flowing in the southeast direction through Arkansas to the Mississippi River.

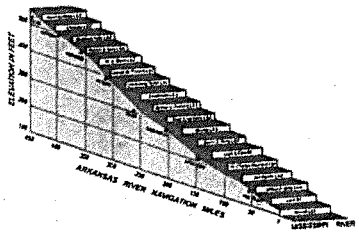
The MKARNS is a multi-beneficiary system providing navigation, hydropower generation, recreation, water supply, and fish and wildlife habitats.

There is a 420 foot drop in elevation from the Port of Catoosa to the Mississippi River. A series of eighteen locks and dams work together to maintain navigation throughout the system.

The MKARNS was classified as a high-use waterway system in February 2015 based on a 5-year average of 3.3 billion tons transported.



Map of MKARNS
Source: USACE



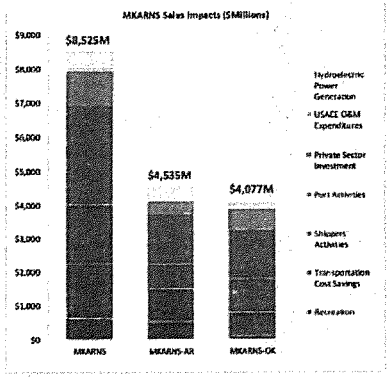
Map of MKARNS Elevation Change
Source: OKLADOT

MKARNS Sales Impacts

Here we report the total direct and indirect impacts on Sales revenue if the MKARNS was no longer in operation. Sales is defined as the revenue generated by firms whose operations are affected by the MKARNS.

The total MKARNS impact on Sales is $8.525 billion nationwide. On its own, the Arkansas segment of the MKARNS nationally contributes $4.535 billion, and while the Oklahoma MKARNS segment nationally contributes $4.077 billion. The combined impact is slightly less than the two segment impacts combined due to shared freight benefits.

Examining the MKARNS Sales impact results, we observe Port Activities ($2,904 million), Shippers' Activities ($1,775 million), and Transportation Cost Savings ($1,615 million) are the largest contributors to Sales impacts.



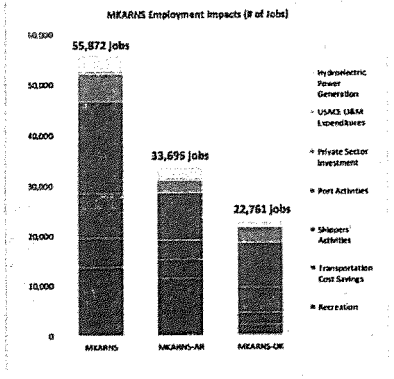
Benefits	Sales ($ Million)		
	MKARNS	MKARNS-AR	MKARNS-OK
Hydroelectric Power Generation	$474	$335	$135
USACE O&M Expenditures	$94	$60	$34
Private Sector Investment	$1,030	$396	$629
Port Activities	$2,904	$1,503	$1,477
Shippers' Activities	$1,775	$744	$1,018
Transportation Cost Savings	$1,615	$968	$677
Recreation	$634	$528	$106
Total Impact	$8,525M	$4,535M	$4,077M

MKARNS Employment Impacts

Employment impacts are the jobs created directly by MKARNS activities due to purchases from businesses and individuals' local expenditures.

The total impact on Employment of the MKARNS is 55,872 jobs nationwide. On its own, the Arkansas segment of the MKARNS nationally contributes 33,695 jobs, and while the Oklahoma MKARNS segment nationally contributes 22,761 jobs. The combined impact is slightly less than the two segment impacts combined due to shared freight benefits.

The largest component of the entire MKARNS and MKARNS Oklahoma segment employment impacts are due to port activities (18,070 and 8,969 jobs respectively). The largest employment impact component of the MKARNS Arkansas segment is due to recreation (11,429 jobs).



Benefits	Employment (# of Jobs)		
	MKARNS	MKARNS-AR	MKARNS-OK
Hydroelectric Power Generation	2,986	2,146	887
USACE O&M Expenditures	663	434	229
Private Sector Investment	5,524	2,394	3,105
Port Activities	18,070	9,580	8,969
Shippers' Activities	9,077	3,980	5,073
Transportation Cost Savings	6,000	3,732	2,374
Recreation	13,552	11,429	2,123
Total Impact	55,872	33,695	22,761

ATTACHMENT B

ARKANSAS OKLAHOMA PORT OPERATORS ASSOCIATION LETTER OF SUPPORT

"The Arkansas-Oklahoma Port Operators Association (AOPOA) encourages and endorses the support and allocation of resources that enhance the viability and competitiveness of the McClellan-Kerr Arkansas River Navigation System (MKARNS) to include deepening the navigable channel to 12 feet and updating or constructing tow haulage equipment at all of the locks, and to ensure the continued reliability of the system by overcoming the backlog of critical maintenance, and addressing and correcting threats to navigation, such as the Three-Rivers-Area / Melinda structure."

Whereas,

The AOPOA is a non-profit organization with the objective of promoting development and commerce on the McClellan-Kerr Arkansas River Navigation System (MKARNS);

The MKARNS provides significant economic benefits to the Nation, and has been designated as a Marine Highway (M-40);

The MKARNS annually ships approximately 11.5 million tons of waterborne cargo with an estimated value of $4.3 billion;

The MKARNS is a multipurpose system providing other benefits to the region and Nation, including flood control, hydroelectric power generation, recreation, and environmental and ecological advantages;

The AOPOA membership is comprised of port and terminal operators from the States of Arkansas and Oklahoma and other regional businesses which utilize and benefit from the MKARNS.

The AOPOA supports and promotes the need for adequate funding of the United States Army Corps of Engineers to maintain and enhance the reliability of the MKARNS, and endorses the following four, critical needs of the system:

1. **Development and Implementation of an Expedient Solution to the Three Rivers Area Structure** - This critical, manmade structure located near the confluence of the White, Arkansas, and Mississippi Rivers, is failing and needs to be reengineered. Failure of this structure, which could occur during a localized flood event, will lead to loss of navigation on the entire system.

2. **Addressing the Backlog of Critical Maintenance on the MKARNS** – The U.S. Army Corps of Engineers (USACE) has a list of critical maintenance on the system that has not been performed due to lack of sufficient funding. The current value of this unfunded maintenance is approximately $150 million. USACE defines 'critical' as those items of deferred maintenance that have a 50% probability of failing within the next five years.

3. **Deepening the Navigation Channel From 9 Feet to 12 Feet** – An increase of 3 feet to the authorized depth would allow barges to be loaded to as much as 30% more capacity, making the most efficient mode of transportation even more efficient.

4. **Implementing Modern Tow-Hauling Equipment at All Navigation Locks** – Currently, tow-haulage equipment, which allows for more expeditious locking of vessels and barges, is only installed on Arkansas lock locations, many of which have reached their design life and frequently break down. Tow haulage capabilities need to be added to the five, Oklahoma-located locks.

By vote of the membership of the Arkansas-Oklahoma Port Operators Association (AOPOA) on September 7, 2017, this position paper is ratified.

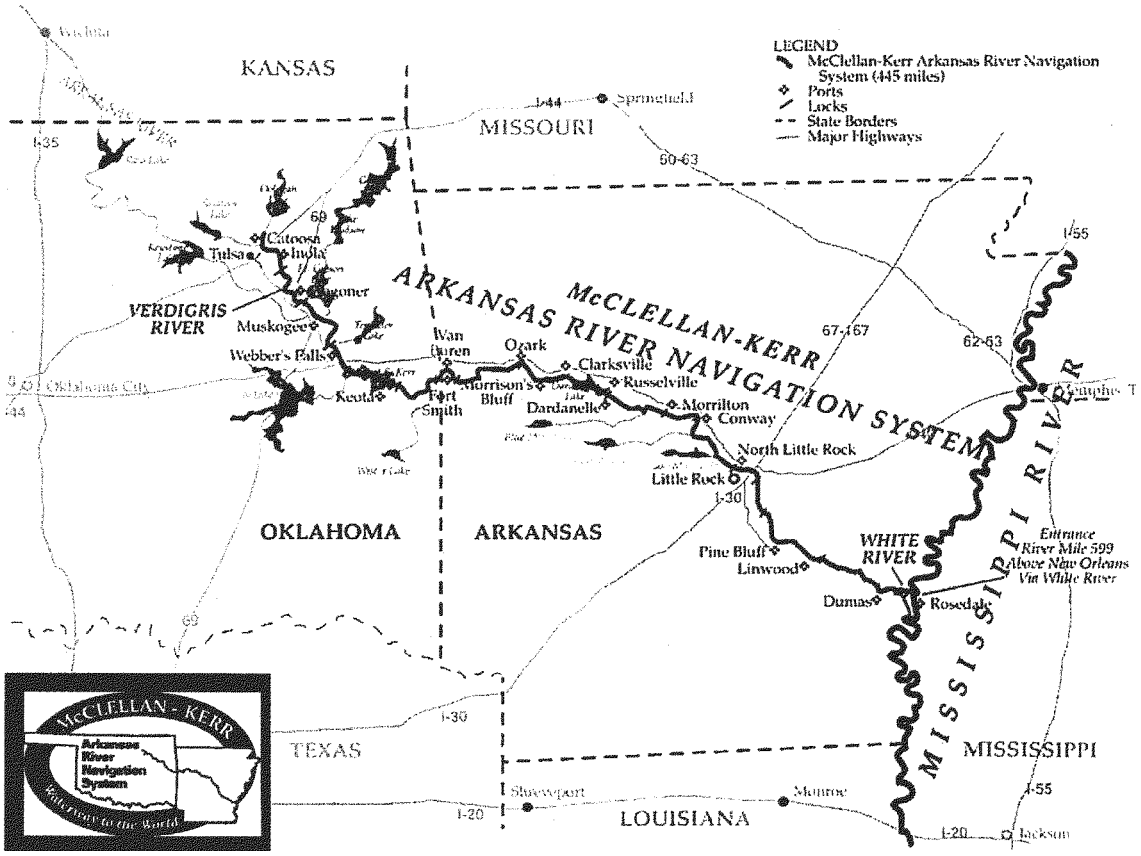
Fred Taylor, AOPOA President

SEPT 7, 2017
Date

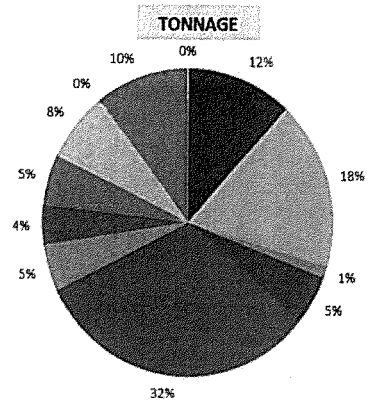
ALLIANCE
METALS USA
DOT
OAKLEY
LITTLE ROCK PORT AUTHORITY
Oxbow
GAVILON
JANTRAN
Five Rivers DISTRIBUTION
WATCO COMPANIES
COASTAL CARGO
WEBCO INDUSTRIES
vallourec
Inter-Chem
ENTERPRISES, INC
PORT OF MUSKOGEE
TULSA PORT OF CATOOSA
NuStar
STATE CHAMBER OF OKLAHOMA
WE MEAN BUSINESS
CF
LOGISTIC SERVICES INC.
STC
The City of Fort Smith ARKANSAS
BASIN COMMERCE
KoisWire
CMS
ARKANSAS STATE CHAMBER OF COMMERCE
ASSOCIATED INDUSTRIES OF ARKANSAS
Business matters.
HOLLYFRONTIER
City of LITTLE ROCK

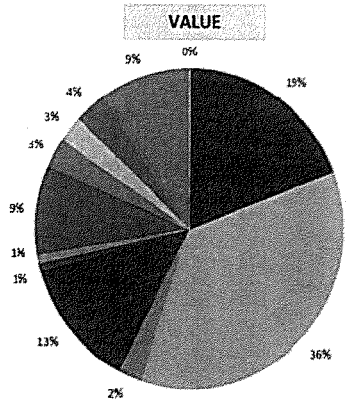
ATTACHMENT C

CONGRESSIONAL STAFFING BRIEFING - FALL 2017


LEGEND
McClellan-Kerr Arkansas River Navigation System (445 miles)
Ports
Locks
State Borders
Major Highways
KANSAS
MISSOURI
OKLAHOMA
ARKANSAS
TEXAS
LOUISIANA
MISSISSIPPI
McCLELLAN-KERR ARKANSAS RIVER NAVIGATION SYSTEM
MISSISSIPPI RIVER
WHITE RIVER
VERDIGRIS RIVER
Tulsa
Catoosa
Inola
Muskogee
Webber's Falls
Keota
Fort Smith
Van Buren
Ozark
Morrison's Bluff
Clarksville
Russellville
Dardanelle
Morrilton
Conway
North Little Rock
Little Rock
Pine Bluff
Linwood
Dumas
Rosedale
Entrance River Mile 599 Above New Orleans Via White River
Springfield
Shreveport
Monroe
Jackson
Oklahoma City
Wichita
I-35
I-44
I-30
I-20
I-55
I-69
60-63
67-167
62-63
McCLELLAN - KERR
Arkansas River Navigation System
Waterway to the World

UNITED STATES
MEXICO
CANADA
OTTAWA
WASHINGTON
OREGON
CALIFORNIA
NEVADA
IDAHO
MONTANA
WYOMING
UTAH
ARIZONA
COLORADO
NEW MEXICO
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
WISCONSIN
ILLINOIS
MICHIGAN
INDIANA
OHIO
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
PENNSYLVANIA
NEW YORK
MAINE
VERMONT
NEW HAMPSHIRE
MASSACHUSETTS
RHODE ISLAND
CONNECTICUT
NEW JERSEY
DELAWARE
MARYLAND
THE BAHAMAS
PACIFIC OCEAN
ATLANTIC OCEAN
Gulf of Mexico





CY07 - CY16 TEN (10) YEAR COMMODITY COMPARISON ON THE ENTIRE McCLELLAN-KERR ARKANSAS RIVER NAVIGATION SYSTEM (MKARNS) 114,423,075 (TONS) / $42,683,498,262

	TONNAGE	VALUE
IRON/STEEL	13,467,798	$8,201,888,982
CHEM FERT	20,352,084	15,318,199,543
OTHER CHEM	1,379,558	1,038,338,124
PETRO PROD	6,087,727	5,654,341,715
SAND/GRAVEL/ROCK	36,215,725	300,228,360
COKE & COAL	5,603,487	353,131,751
MINERALS/BLDG MAT'S	4,708,627	3,872,610,276
FOOD/FARM PROD	6,103,594	1,291,581,526
WHEAT	8,440,647	1,126,066,716
EQUIP/MACH	307,383	1,536,915,000
SOYBEANS	11,630,399	3,963,523,675
MISC	126,046	26,672,594
TOTALS:	114,423,075	$42,683,498,262

McCLELLAN - KERR

The MKARNS:

Protects Millions of Acres of Land From Floods

In 2013, it is estimated that the Arkansas River Basin Projects prevented $315 Million in flood damages within the Tulsa and Little Rock Corps Districts. Cumulative damages prevented are estimated to be $10.5 Billion.

Provides Recreational & Fresh Water Supply

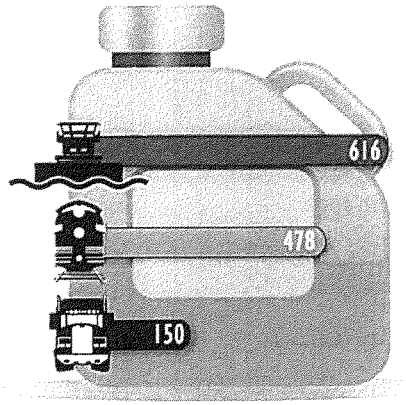
Congressional Staffers Briefing
November 13, 2017

Advantages of Inland Waterways Transport:

Moving Freight Efficiently Throughout America

Transporting freight by water is also the most energy-efficient choice.

Barges can move one ton of cargo 616 miles per gallon of fuel. A rail car would move the same ton of cargo 478 miles, and a truck only 150 miles.



Ton-miles Traveled per Gallon of Fuel

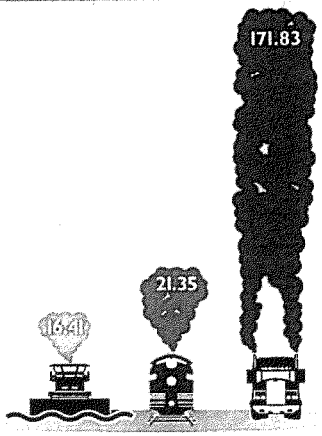
NATIONAL WATERWAYS FOUNDATION

Advantages of Inland Waterways Transport:

The Greener Way to Move America's Cargoes

Barges have the smallest carbon footprint among other transportation modes.

To move an identical amount of cargo by rail generates 30% more carbon dioxide than by barge, and 1,000% more emissions by trucks than by barge.



Tons of CO_2 per Million Ton-miles

NATIONAL WATERWAYS FOUNDATION

Priorities for the MKARNS:

Three Rives Area/Melinda Structure - New Start/Cost Share

Backlog of Critical Maintenance – more than $143 million

12-Foot Channel – New Start/Cost Share

Congressional Staffers Briefing
November 13, 2017

"...unless and until we can change our federal resourcing model, which in my view is fundamentally unsustainable, or shut down some of our projects or defund some of our projects, the reliability quotient is going to continue to go down."

-Maj. Gen. John Peabody, Deputy Commanding General for Civil and Emergency Operations, USACE;

Congressional Staffers Briefing
November 13, 2017

ATTACHMENT D

IMPLEMENTATION GUIDANCE FOR SECTION 1153 OF THE WATER RESOURCES AND DEVELOPMENT ACT OF 2016 (WRDA 2016)

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
441 G STREET, NW
WASHINGTON, DC 20314-1000

CECW-P SEP 2 8 2017

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Implementation Guidance for Section 1153 of the Water Resources and Development Act of 2016 (WRDA 2016) Amending Section 1024 of the Water Resources Reform and Development Act of 2014 (WRRDA 2014), Authority to Accept and Use Materials, Services, or Funds

1. Section 1153 of WRDA 2016 amends Section 1024 of WRRDA 2014 to authorize the Secretary to accept and use materials, services, or funds contributed by a non-Federal public entity, a nonprofit entity, or a private entity for the purpose of repairing, restoring, replacing, or maintaining a water resources project if the District Commander determines that there is a risk of adverse impacts to the functioning of the project for the authorized purposes of the project and that acceptance of the materials, services, or funds is in the public interest. Section 1024, as amended, further provides that the Secretary may only use materials or services if they comply with all applicable laws and regulations that would apply if they were acquired by the Secretary. It further provides that such services must be supplementary to existing federal employees used to perform work that would not otherwise be accomplished as a result of funding or personnel limitations. Finally, it includes reporting requirements. Copies of Section 1024 of WRRDA 2014, as amended (33 U.S.C. 2325a) and Section 1153 of WRDA 2016 are enclosed.

2. In accordance with the guidance provided in this memorandum, District Commanders are delegated authority to accept services, materials, or funds contributed (referred to as "contributions") from a non-Federal public entity, nonprofit entity, or private entity (referred to as "contributor") for the purpose of repairing, restoring, replacing, or maintaining a water resources project, if the District Commander determines that there is a risk of adverse impacts to the functioning of the project for the authorized purposes of the project and that such acceptance and use is in the public interest. This authority may not be further delegated. The District Commander must provide written documentation of these determinations. In addition, there may be special circumstances, such as, for example, if dam safety issues are involved, where the district should coordinate with the entire vertical team before the district commander determines whether to accept the contribution.

a. This guidance applies to federally authorized water resources projects operated and maintained by the U.S. Army Corps of Engineers (Corps).

b. Materials, including equipment, must meet Corps standards, and be approved by the District Commander or his or her designated representative. Material handling, storage, and disposal shall comply with provisions of EM 385-1-1, Safety and Health

Requirements Manual. Materials intended as part of permanent repairs shall include a warranty that is transferable to Corps.

c. Services will not be accepted to displace Corps personnel. However, such services may supplement existing staff and may also include work that would not otherwise be accomplished because of Corps funding or personnel limitations. Services to be provided must be reviewed and approved by the District Commander.

d. Environmental compliance with all applicable laws must be completed before the initiation of repair, restoration, replacement or maintenance activities with contributions. The contributor must provide funds to the district to cover costs to complete any environmental compliance required for these activities.

e. Corps' acceptance and use of contributions under Section 1024, as amended, does not involve 33 U.S.C. 408.

f. The District Commander or his or her designated representative shall oversee the services provided to ensure that they are consistent with the plan approved by the district. The contributor bears responsibility if services provided are performed in a negligent manner.

g. Materials or services provided must comply with all applicable laws that would apply if such materials and services were acquired by the Secretary. Applicable Federal Laws and Regulations may include, but are not limited to, 40 U.S.C. 3141-3148 and 40 U.S.C. 3701-3708 (labor standards originally enacted as the Davis-Bacon Act, the Contract Work Hours and Safety Standards Act, and the Copeland Anti-Kickback Act); the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended (42 U.S.C. 4630 and 4655) and the regulations contained in 49 CFR Part 24; Section 601 of the Civil Rights Act of 1964 (P.L. 88-352), as amended (42 U.S.C. 2000d), and Department of Defense Directive 5500.11 issued pursuant thereto; the Age Discrimination Act of 1975 (42 U.S.C. 6102); the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Army Regulation 600-7 issued pursuant thereto; Buy American Act (41 U.S.C. 8302); Clean Air Act (42 U.S.C. 7606; Clean Water Act (33 U.S.C. 1368; Jones Act (46 U.S.C. 55109); Shipping Act (46 U.S.C. 55109); Utilization of Small Business Act (15 U.S.C. 631, 644; and Equal Opportunity for Veterans Act (38 U.S.C. 4212). In addition, a list of related laws which may apply and must be satisfied when applicable, is set forth at 33 CFR Section 320.3. The District Commander should be prepared to provide copies of language used by the Corps in its standard contracts to serve as a guide for the contributor in developing its own contract.

h. If the existing real property interests are not sufficient for the performance of work involving contributions under Section 1024, as amended, the contributor will be required to undertake acquisition of additional real property interests in accordance with the applicable provisions of the Uniform Relocation Assistance and Real Property

Acquisition Policy Act of 1970, Public Law 91-646, as amended (42 U.S.C. 4601-4655), and the Uniform Regulations contained in 49 C.F.R. Part 24, or provide funds to the district to cover the costs associated with the acquisition of additional real property interests.

i. There will be no credit or repayment for contributions provided under Section 1024, as amended.

3 Procedure.

a. Prior to the acceptance of contributions under Section 1024, as amended, the district must develop a plan for use of the contributions. The plan must demonstrate that there is a risk of adverse impacts to the functioning of the project and that the acceptance of the contributions would be in the public interest. The plan must document in detail how use of the proposed contributions are in accordance with the operation and maintenance manual or related document that supports the operation, maintenance, repair, rehabilitation and replacement of the project. The plan will also document that the materials or services to be provided by the contributor meets the requirements of Engineer Manual 385-1-1 and other relevant Corps regulations and address, at a minimum, the following items:

(1) A defined scope of services will be provided by the contributor. The scope will describe how the contributions will serve to reduce risk of adverse impacts to the functioning of the project and help maintain a safe and reliable project. In addition the plan will identify whether additional real property interests need to be acquired to support the services to be provided and identify party responsible for acquisition.

(2) A listing of privately owned or leased vehicles, vessels, machinery, or other specialized equipment to be used by the contributor that comply with the requirements for inspection criteria, safety devices and operational aids, environmental considerations, operating rules, and guarding and safety devices.

(3) A listing of qualified contractors or employees of the contributor who are authorized to operate, for official use, government-owned or leased vehicles, vessels, machinery or other specialized equipment. Employees or contractors for the contributor must have the proper training, license, and/or experience in accordance with Corps operator permit policies and understanding of the safety requirements to the satisfaction of the District Commander before operating a government-owned or leased vehicle, vessel, or equipment. Government authorization policies apply to contractors or employees for each contributor.

(4) A security clearance for all contractors and employees for the contributor must be validated, when appropriate, as determined by the district commander. Individuals may be legal aliens (permanent residents) or foreign exchange students. Any non-U.S.

citizen must present his/her Visa (or passport if in the U.S.in tourist status from a visa-waiver country where visas are not required) or U.S. Permanent Resident Card INS Form 1-551 (formerly known as Alien Registration Receipt Card) for review and verification. Persons who have been convicted of a violent crime, sexual crime, arson, crime with a weapon, or sale or intent to distribute illegal drugs, or are an organized crime figure will not be utilized as volunteers. Persons awaiting trial or under indictment for any of the crimes listed above will not be utilized as a volunteer until the case has been resolved in the person's favor through the legal process. Use of civilian prison labor from the Federal Bureau of Prisons, and State and County Correctional Systems is beyond the scope of this authorization.

(5) An approved Accident Prevention Plan for each contributor.

b. The District Commander will document in writing the approval for accepting contributions under Section 1024, as amended. Template agreements for acceptance and use of contributions will be posted on the Corps Agreements website. Following District Counsel review and concurrence that the negotiated agreement is acceptable, the District Commander may approve and sign the agreement. The agreement must be fully executed prior to the acceptance of contributions from the contributor. Any proposed substantive deviations to the template agreements must be submitted through the MSC to the appropriate Headquarters Regional Integration Team (RIT) for resolution.

4. Within 30 days of accepting contributions under Section 1024, as amended, the District Commander will submit, through the MSC Commander, to the appropriate RIT, a report that includes a description of the activities undertaken using the contributions, including the costs associated with such activities, and a comprehensive description of how the activities were necessary for maintaining a safe and reliable water resources development project. CECW-I will consolidate the information from each RIT into a report, and by 30 October of the first fiscal year in which contributions are accepted under Section 1024, as amended, and by 30 October of each subsequent fiscal year, the Director of Civil Works, will transmit the draft annual report to the Assistant Secretary of the Army (Civil Works) for review and submission to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives by 1 February.

5. This guidance supersedes the implementation guidance for Section 1024 of WRRDA 2014, dated 8 June 2016. This guidance is in addition to and does not affect guidance relating to the acceptance of contributed funds pursuant to other authorizations, such as ER 1130-2-500 for voluntary contributions for Sections 203 and 225 of WRDA 1992 and the implementation guidance for Sections 1015 and 1023 of WRRDA 2014, dated 11 February 2015.

CECW-P
SUBJECT: Implementation Guidance for Section 1153 of the Water Resources and Development Act of 2016 (WRDA 2016), Authority to Accept and Use Materials, Services, or Funds

Encls

JAMES C DALTON, P.E.
Director of Civil Works

DISTRIBUTION:
COMMANDERS, REGIONAL BUSINESS AND PROGRAMS DIRECTOR
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PACIFIC OCEAN DIVISION, CEPOD
SOUTH ATLANTIC DIVISION, CESAD
SOUTH PACIFIC DIVISION, CESPD
SOUTHWESTERN DIVISION, CESWD

Section 1024 of WRRDA 2014, as amended by Section 1153 of WRDA 2016 (33 U.S.C. § 2325a). Authority to accept and use materials and services

(a) In general
Subject to subsection (b), the Secretary is authorized to accept and use materials, services, or funds contributed by a non-Federal public entity, a nonprofit entity, or a private entity to repair, restore, replace, or maintain a water resources project in any case in which the District Commander determines that--

(1) there is a risk of adverse impacts to the functioning of the project for the authorized purposes of the project; and (2) acceptance of the materials and services or funds is in the public interest.

(b) Limitation
Any entity that contributes materials or services under subsection (a) shall not be eligible for credit or reimbursement for the value of such materials or services.

(c) Additional requirements

(1) Applicable laws and regulations
The Secretary may only use materials or services accepted under this section if such materials and services comply with all applicable laws and regulations that would apply if such materials and services were acquired by the Secretary.

(2) Supplementary services
The Secretary may only accept and use services under this section that provide supplementary services to existing Federal employees, and may only use such services to perform work that would not otherwise be accomplished as a result of funding or personnel limitations.

(d) Report
Not later than February 1 of each year after the first fiscal year in which materials, services, or funds are accepted under this section, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives an annual report that includes--(1) a description of the activities undertaken, including the costs associated with the activities; and (2) a comprehensive description of how the activities are necessary for maintaining a safe and reliable water resources project.

Section 1153 of WRDA 2016. Authority to Accept and Use Materials and Services.

Section 1024 of the Water Resources Reform and Development Act of 2014 (33 U.S.C. 2325a) is amended—

(1) by striking subsection (a) and inserting the following:

"(a) IN GENERAL.—Subject to subsection (b), the Secretary is authorized to accept and use materials, services, or funds contributed by a non-Federal public entity, a nonprofit entity, or a private entity to repair, restore, replace, or maintain a water resources project in any case in which the District Commander determines that—

"(1) there is a risk of adverse impacts to the functioning of the project for the authorized purposes of the project; and

"(2) acceptance of the materials and services or funds is in the public interest.";

(2) by redesignating subsection (c) as subsection (d);

(3) by inserting after subsection (b) the following:

"(c) ADDITIONAL REQUIREMENTS.—

"(1) APPLICABLE LAWS AND REGULATIONS.—The Secretary may only use materials or services accepted under this section if such materials and services comply with all applicable laws and regulations that would apply if such materials and services were acquired by the Secretary.

"(2) SUPPLEMENTARY SERVICES.—The Secretary may only accept and use services under this section that provide supplementary services to existing Federal employees, and may only use such services to perform work that would not otherwise be accomplished as a result of funding or personnel limitations."; and

(4) in subsection (d) (as redesignated by paragraph (2)) in the matter preceding paragraph (1)—

(A) by striking "Not later than 60 days after initiating an activity under this section," and inserting "Not later than February 1 of each year after the first fiscal year in which materials, services, or funds are accepted under this section,"; and

(B) by striking "a report" and inserting "an annual report".

ATTACHMENT E

ISSUE PAPER – COST SHARE AND CAPABILITY OF THE USACE

Issue Paper

PROJECT NAME AND STATE: McClellan-Kerr Arkansas River Navigation System (MKARNS), AR & OK, 12-Foot Navigation Channel

AUTHORIZATION: Section 136, E&WDAA FY 2004 (PL108-137).

SUMMARIZED FINANCIAL DATA:	CONSTRUCTION
Estimated Federal Cost	$ 86,031,000
Inland Waterway Trust Fund	86,031,000
Total Estimated Project Cost	$172,062,000
Allocation thru FY 2007	5,500,000 1/
Budget Request for FY 2008	0
Allocation for FY 2008	0
Budget Request for FY 2009	0
Balance to Complete After FY 2009	166,561,000
Amount That Could be Used in FY 2009	40,000,000

1/ Funds ($7M) provided under O&M, General Appropriations $1.5M used to complete feasibility study and $5.5M being used for PED and construction.

LOCATION AND DESCRIPTION: The existing 445-mile long McClellan-Kerr Arkansas River Navigation System (MKARNS) consists of 18 locks and dams, providing 9-foot depth inland navigation from the Mississippi River to Catoosa, Oklahoma. This project would deepen the navigation channel to a minimum depth of 12 feet throughout the MKARNS.

PROPOSED ACTIVITIES FOR FY 2008: O&M carryover funds are being used to construct 3 structures near navigation mile 146.

APPLICATION OF THE AMOUNT THAT COULD BE USED IN FY 2009: Not included in the FY 2009 budget. Construction funds in the amount $40,000,000, could be used in FY 2009 to continue dredging and construction channel training structures to develop a 12-foot minimum depth channel.

ISSUES AND OTHER INFORMATION: The MKARNS is an inland waterway, subject to the collection of fuel taxes for the Inland Waterway Trust Fund; therefore, all future activities will be cost shared (50/50) with the trust fund for construction of the 12-ft channel. The FY 2005 Senate request was for O&M appropriations and $7M in O&M funds were received in FY 2005 and carried over for FY 2006, 2007, and 2008 efforts. This issue paper addresses the Construction Appropriation, which is the normal funding process for construction of new infrastructure projects. Actual construction has already begun in Pools 2, 7, and Pool 13 and proceeds upstream, respectively.

ADMINISTRATION POSITION: The administration supports this project since it provides high priority inland navigation outputs.

CONGRESSIONAL INTEREST: Senators Pryor (AR), Lincoln (AR), Coburn (OK), and Inhofe (OK); and Congressmen Berry (AR-1), Snyder (AR-2), Boozman (AR-3), Ross (AR-4), Sullivan (OK-1), Boren (OK-2), Lucas (OK-3), Cole (OK-4) and Istook (OK-5).

Senator BARRASSO. Thank you very much, Mr. Robinson.

Before moving to Ms. Ufner, I would like to invite Senator Cassidy, if this is a convenient time for you to introduce your guest here today.

STATEMENT OF HON. BILL CASSIDY,
U.S. SENATOR FROM THE STATE OF LOUISIANA

Senator CASSIDY. Steve Cochran is sitting behind me; I gather he is on the next panel.

Thank you, Mr. Chairman, for allowing me to introduce him.

Chairman Barrasso, Ranking Member Carper and other members, thank you again for allowing me to introduce Steve Cochran, a dedicated Louisiana public servant. Steve has worked for many years in pursuit of a long term solution that will restore and protect Louisiana's incredibly fragile coastal ecosystem. He has worked with former Louisiana Congressmen then-Governor Buddy Roemer, the Lake Pontchartrain Basin Foundation, the Mississippi River Delta Coalition and the Environmental Defense Fund, which makes him uniquely qualified to speak to the need of an integrated strategy that utilizes innovative approaches to restore wetlands and support coastal ecosystems.

Now, coastal Louisiana is losing land as we speak. As we speak, there is something on a Google map that looks green that if you really had an updated Google map would no longer look green, it would now look like open water. That is the crisis we have. It poses a serious threat to our State, to our communities, and upon our State's and nation's economy. It has required our State to develop, in a bipartisan fashion, a comprehensive plan referred to as the Louisiana Comprehensive Master Plan for Sustainable Coasts, a $50 billion over 50 years plan to restore Louisiana's coast, based on sound scientific and modeling principles required to be updated every 5 years.

While Louisiana is prepared to implement projects detailed in the master plan, the problem is the environmental review and permitting processes challenges that threaten to stop these projects from going forward. Currently, the average timeframe for the government to approve a Federal project is close to 5 years. Now, remember I said we are losing coastline like this minute? We get 5 years to permit something, and by that time, there has been dramatic change.

This timeframe is unacceptable given the magnitude of the threat to Louisiana's coastline. Revising the permitting approach for the Corps and for other agencies, particularly where multiple Federal agencies are involved, is critical, so that regulations focus on finding ways to expedite consideration of long term ecosystem projects that restore wetlands and protect communities, rather than maintain the current short term regulatory focus that again only seems to impede these important projects from moving forward.

The Mid-Barataria Bay Sediment Diversion, a WRDA authorized project south of New Orleans, offers a textbook example of the need to increase transparency and improve coordination between Federal agencies. The Diversion will take freshwater and sediment

from the Mississippi into threatened wetlands on the western side of the river to be able to sustain new and existing wetlands.

Now, the existing regulatory hurdles in multiple Federal agencies will likely lead to multi-year permitting delays for this and other large ecosystem restoration projects, resulting in the loss of more Louisiana coast.

I look forward to working with this Committee to restore the Mississippi River Delta Coalition, the Corps of Engineers, and other interested parties, to update and modernize the Federal permitting process in the next WRDA reauthorization bill, so that we are better able to sustain coastal environments and communities in both Louisiana and across the nation.

I thank you for the opportunity to testify this morning to introduce Mr. Cochran. Thank you.

Senator BARRASSO. Thank you very much, Senator Cassidy. I know you have other pressing matters. You are welcome to stay as long as you like. I appreciate your coming here today to introduce Mr. Cochran.

Now I would like to call on Ms. Julie Ufner, who is the Associate Legislative Director for the National Association of Counties.

Welcome.

STATEMENT OF JULIE UFNER, ASSOCIATE LEGISLATIVE DIRECTOR, NATIONAL ASSOCIATION OF COUNTIES

Ms. UFNER. Good morning, Chairman Barrasso, Ranking Member Carper and members of the Committee.

I am honored to testify before you today on water infrastructure needs and challenges. My name is Julie Ufner. I am from the National Association of Counties. We represent the nation's 3,069 counties.

I have been asked to share with you our western counties' experiences with the Water Resources Development Act, how we use WRDA to work with the Army Corps to keep our communities safe. Consider this: counties own 45 percent of the nation's road miles and close to 40 percent of the nation's bridges, along with harbors, ports, inland waterways, levees, dams. These play vital roles to keep our economy safe.

This especially plays out in the west, where water issues can be more complex. The Federal Government owns vast tracts of land within counties, which prevents counties from raising property taxes. Yet we are still responsible for law enforcement and emergency services on these lands, while also protecting our residents on non-Federal lands.

The Federal Government owns 97 percent of the land in the city-borough of Juneau, Alaska, which leaves the borough of 33,000 with only 3 percent of usable land. They are highly dependent on tourism, mining, and fishing to drive their $2.6 billion economy. A large part of their success comes from WRDA funding that helps them maintain those navigation channels leading to their port.

In Park County, Wyoming, a community of 30,000 residents and comprised of 81 percent public lands, in the last year has had mountain flooding and ice jams. This has resulted in flooding which has destroyed county bridges and roads, many of which lead to the

gateways of the national parks. The county is now working with the Army Corps and FEMA to replace these structures.

But WRDA could do more. Counties have aging infrastructure in their communities, some of which is close to 100 years old. We have a limited pot of funds to pay for this. One example, Tuolumne County, California, where the local economy of 54,000 is almost solely dependent on an old wooden flume and ditch system for its water, which was built in the 1850s. This flume is located in a heavily overgrown national forest, which is vulnerable to wildfires. If it were destroyed, the community would be without water for months. It would take over a year to rebuild, devastating the local economy.

Additionally, some Federal regulations slow down construction and significantly increase costs for public safety projects. Orange County, California, maintains several hundred miles of flood control channels that are intended to protect homes, businesses, and roads from flooding. But for maintenance activity in these channels, such as cleaning out debris, the county is required to obtain Section 404 permits from the Army Corps of Engineers.

It took the county approximately 3 years to obtain the permit, which mandated them to clear 13 acres of vegetation and required 20 acres of mitigation at a cost of over $3.5 million for a permit that is only valid for 5 years. This is not an isolated example.

Additionally, our counties note that there are challenges within the existing Army Corps structure, which includes cumbersome and complex requirements, the length of time that it takes to complete water studies, limited funding, and competing agency requirements. Congress has a unique opportunity to address this issue. We are encouraged by the Senate's stated commitment to complete a WRDA bill this year.

We look forward to working with you to identify ways in which we can address challenges within the Section 404 permitting program for public safety infrastructure. We would also like to address funding needs, because without WRDA and the Army Corps, our counties would not have been able to accomplish the multitude of projects that we have been able to carry out in the past several decades.

Finally, we encourage Congress to provide a framework of meaningful consultation between the Army Corps of Engineers and State and local government partners on pending rules and policies that directly impact those entities. We believe that this will solve many of the conflicts that now exist between the Army Corps and its intergovernmental partners. Simply put, WRDA is a project that works. Together, we can work to make the partnership stronger.

On behalf of NACo, thank you for the opportunity to testify. I would be happy to answer any questions.

[The prepared statement of Ms. Ufner follows:]

JULIE A. UFNER

Julie A. Ufner is the Associate Legislative Director for Environment, Energy and Land Use at the National Association of Counties (NACo), the only national association representing America's 3,069 county governments.

Ms. Ufner serves as NACo's primary point-of-contact for all federal environmental, energy and land use policy issues with the White House, U.S. Congress, U.S. Environmental Protection Agency (EPA), U.S. Army Corps of Engineers (Corps), Department of Energy (DOE), National Oceanic and Atmospheric Administration (NOAA) and other parties on Clean Water Act, Clean Air Act (CAA) and other federal environment and energy issues.

She joined NACo in June of 2002 from the office of former Representative Phil English (Pa.), where she had four years of legislative experience working on a number of issues, including environmental policy, human resources, energy, banking and international affairs.

Prior to her political experience, Ms. Ufner worked with adolescents, teens and adults with mental health illnesses. Previous jobs include teaching horseback riding, giving guided carriage tours of historic Philadelphia and working in her parents' pizza shop. She has traveled overseas extensively, including several stints living and studying in Japan.

Ms. Ufner originally hails from Butler County in western Pennsylvania. She was introduced to public service at an early age by her father, who served several terms as a Butler City Councilman. Regular dinnertime conversations about the City of Butler opened her eyes to the challenges and opportunities facing local governments today.

She is a graduate of Slippery Rock University in Slippery Rock, Pennsylvania and currently lives in Alexandria, VA.

WRITTEN STATEMENT FOR THE RECORD

JULIE A. UFNER
ASSOCIATE LEGISLATIVE DIRECTOR

ON BEHALF OF THE NATIONAL ASSOCIATION OF COUNTIES

AT THE HEARING

AMERICA'S WATER INFRASTRUCTURE NEEDS AND CHALLENGES

BEFORE THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

JANUARY 10, 2018
WASHINGTON, D.C.

Thank you Chairman Barrasso, Ranking Member Carper and members of the committee, for the opportunity to testify on "America's Water Infrastructure Needs and Challenges" within the context of the Water Resources Development Act (WRDA).

My name is Julie Ufner. I have served as Associate Legislative Director for Environment, Energy and Land Use at the National Association of Counties (NACo) for more than 15 years. During that time, I have worked on many issues related to the U.S. Environmental Protection Agency (EPA). U.S. Army Corps of Engineers (Corps), National Oceanic Atmospheric Administration (NOAA), U.S. Department of Energy and more.

On behalf of NACo, we are pleased to weigh in on water infrastructure needs and challenges in our counties, especially our rural western counties, and to address potential next steps for a WRDA package that may be considered in Congress in the coming months.

About NACo

Founded in 1935, NACo is the only national organization that represents county governments in the United States, bringing together county officials to advocate with a collective voice on national policy, exchange ideas and build new leadership skills, pursue transformational county solutions, enrich the public's understanding of county government and exercise exemplary leadership in public service.

About America's Counties

Counties are highly diverse across the nation, and vary immensely in natural resources, social and political systems, cultural, economic and structural circumstances, and public health and environmental responsibilities. Counties range in area from 26 square miles (Arlington County, Virginia) to 87,860 square miles (North Slope Borough, Alaska). The population of counties varies from Loving County, Texas, with just under 100 residents, to Los Angeles County, California, which is home to nearly ten million people. Of the nation's 3,069 counties, approximately 70 percent are considered "rural," with populations less than 50,000, and 50 percent of these have populations below 25,000. At the same time, there are more than 120 major urban counties, which collectively provide essential services to more than 130 million people each day.

County governments exist to deliver public services at the local level, and we are accountable to our constituents and communities as well as to state and federal authorities. At the leadership level, county elected officials are tasked with shaping county and community policies and investments that drive economic and community development, safeguard our citizens and community investments, and promote public health and wellbeing. In fulfilling this mission, counties are not only subject to state and federal regulations, but also help to implement these regulations at the local level.

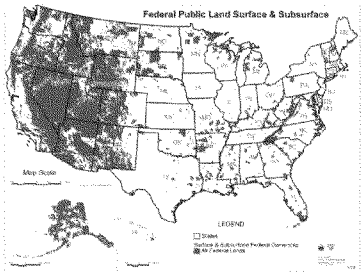
In the West, the federal government owns roughly 635-640 million acres – through the Bureau of Land Management (248 million acres); the U.S. Department of Agriculture's Forest Service (193 million acres); the U.S. Fish and Wildlife Service (89 million acres); and the National Park Service (80 million acres) – or one-third of all land in the United States. Approximately 62 percent of counties have federal public land within their jurisdictions.

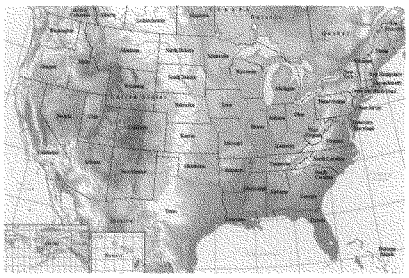
Unlike private property, this land is not taxable by local governments, but removing this land from the local tax rolls does not relieve local governments of their mandated responsibilities. Counties with public lands in their jurisdictions often provide critical services on those lands, including law enforcement, search and rescue, fire management, solid waste disposal and emergency medical services.

Counties of all sizes play a key role in water issues.

The subject of today's hearing is important to counties across the United States, because counties and water issues are inextricably linked, and counties are tasked with protecting the environment, ensuring public health and safety, and strengthening the economic vitality of our communities.

In western counties, the water issues only become more crucial. The first map, on the left, shows the public lands ownership in the United States and the second map, on the right, shows the differences in topographic elevations.





The differences you see in these maps create additional issues related to water for western counties. First, counties are unable to collect property taxes on any of the federal public land within their boundaries, severely limiting their ability to raise revenue to meet local infrastructure needs. Further, not only are population centers further apart, the land in the West is often more mountainous and arid, often leading to higher cost for roads, power lines, water and other public services. Perhaps the most notable of these challenges is access to clean, reliable sources of water.

While water resources are a huge issue in all counties, today I will focus my remarks on the specific sets of challenges western counties face and how these issues can be addressed in WRDA.

Water infrastructure is integral to counties' ability to protect public safety and grow our economies.

As major owners of public infrastructure – we own and operate 45 percent of public roads and nearly 40 percent of bridges, and are involved in the operations of a third of the nation's transit systems and airports – counties play an essential role in America's transportation and water infrastructure networks. Every year, we invest more than $120 billion on our infrastructure to facilitate everything from Americans' daily commutes to the shipping of goods around the globe.

Our western counties own a wide variety of infrastructure that is directly impacted by WRDA and Corps policies – from a port in the Borough of Juneau, Alaska to the Lowndes County Port in inland Mississippi, from Los Alamos County, New Mexico's drinking water service to wastewater treatment facilities in Maui County, Hawaii, and from dams in King County, Washington to levees in Navajo County, Arizona and flood control channels in Orange County, California.

Counties and our local economies are huge economic drivers for the nation, especially in the West. Counties directly employ 3.6 million people, and invest $554.4 billion each year in services and programs to help our communities remain dynamic and protect our residents' safety and quality of life. But, none of this would be possible without the tax base to support it.

Rural counties' economies are often built on a foundation provided by agriculture, manufacturing and natural resources, and benefit from a robust, safe transportation system that includes harbors, ports and inland waterways.

A good example of this hails from the Borough of Juneau in the panhandle of southeast Alaska, 900 air miles north of Seattle and 600 air miles southeast of Anchorage. With a current population of 33,026, it is comprised of 3,254 square miles, of which 96.8 percent is federal land. Since there is only 3.2 percent of taxable land in the borough, the economy is heavily dependent on government, tourism, mining and fishing, and the Borough's Docks and Harbor played an integral part in the county's $2.6 billion economy in 2016.

In the realm of water, counties play a key role as both co-regulators *and* regulated entities in protecting the environment and providing public water services for our residents and businesses. As regulators, counties are often responsible for controlling water pollution at the local level. We may enact floodplain and illicit discharge rules, set building code requirements, adopt setbacks for land use plans, and may be responsible for environmental restoration, water recharge areas, green infrastructure, water conservation programs and other programs. Additionally, as owners of public safety infrastructure, counties are often required to comply with federal and state requirements.

Counties play an indispensable role in addressing public health and safety issues such as preparing and responding to flooding threats and other water challenges and hazards. While state statutes and organizational structures vary, local emergency management responsibilities are most commonly vested in county governments. Following a disaster, local emergency managers are often first on the scene and play a key role in coordinating local emergency management efforts and working to mitigate damage from disasters. Other key county staff involved in pre- and post-disaster efforts include local police, sheriffs, firefighters, 911 call center staff, public health officials, floodplain managers and others.

When flooding occurs, pipes burst, levees break or dams overflow, residents, businesses and visitors call us for help. This was demonstrated over and over in 2017 with Hurricanes Harvey, Irma and Maria, as well as the massive wildfires in both Northern and Southern California. In the aftermath of disasters such as these, we coordinate and help fund clean-up, recovery and rebuilding so that our residents can return to their lives as quickly as possible.

Custer County is a rural county of 11,135 residents and over 3,793 square miles in southeastern Montana that is heavily dependent on ranching and agriculture. In 2016, it contributed $519.7 million to the nation's GDP. Approximately 80 percent of residents and businesses in its county seat, Miles City, are located within the natural floodplain or floodway at the confluence of the Yellowstone and Tongue Rivers. In 2015, the city and the county joined forces and in 2016 a contract was signed with the Corps to undertake a Section 205 Feasibility Study on how to protect the community from a 500-year flood. The study is anticipated to be completed in 2019. Although the Study and potential related levee construction are relatively standard, Miles City and Custer County are the first in Montana to undertake a project of this significance, cost, and duration.

The bottom line is, decisions that county leaders make every day about water, land use and economic development influence local and national prosperity, shape how communities grow and contribute to Americans' quality of life.

Throughout the West, counties face unique water challenges.

Counties across nation are facing a combination of factors that impact their ability to deal with water issues, such as increased federal and state mandates, reduced revenue from property taxes, and the growing cost of services and aging infrastructure.

This is further complicated in the West, where counties have huge tracts of federal lands within their borders. While the federal government does provide payments to counties to replace forgone property taxes and to defray the costs incurred by counties for services they provide on public lands, these funds are typically less than what counties would receive from property taxes and are unreliable for budget purposes since they are tied up in the annual appropriations process. For example, both McKenzie County, North Dakota and Owyhee County, Idaho

receive just $0.37 cents per acre of public land; the federal government owns 33.1 percent of lands in McKenzie County and 74.1 percent in Owyhee County.

The landscape in the West is dominated by forests and mountains, which leave counties vulnerable to wildfires and ice jams, and ultimately flooding events. WRDA projects can help them strengthen local resiliency.

This past year, Park County, a rural county of 29,228 residents in northwestern Wyoming, was beset by both mountain flooding and ice jams in its five rivers and tributaries – North and South Fork, Shoshone, Greybull, Wood and Clarks Fork Rivers. Since 80.9 percent of the county's 6,979 square miles is public lands, including a large portion of Yellowstone National Park, the county's 29,228 residents live on just 19.1 percent of the county's land and a portion of that is designated as floodplain. Spring of 2017 brought some of the worst flooding in memory, and a disaster declaration was signed by the president that summer to address the damage caused to the county's roads and bridges. The county is now working closely with the Corps and the Federal Emergency Management Administration (FEMA) to repair the roads. While most of the funding will come from FEMA, the Corps has been involved in the review and permitting of specific infrastructure improvements impacting the rivers.

While El Paso County, Colorado is considered "urban," with a population of close to 640,000 residents, it includes a very diverse mix of urban, suburban and rural areas. The county lies in east central Colorado and encompasses more than 2,100 square miles, twice the size of Rhode Island, and contains over 113,857 acres of land within its jurisdiction. The western part of El Paso County is extremely mountainous and the eastern part is largely prairie land with strong agricultural components. Despite being one of the most populous counties in Colorado, El Paso County faces constant risk of wildfires, drought and flooding. In the past several years, the county has had major wildfires in the Waldo Canyon and Black Forest areas, totaling about $40 million in damage and burning more than 32,500 acres. These fires have significantly changed the landscape; the trees and vegetation that once protected the area from stormwater runoff is now gone, resulting in dangerous flash floods. Since then, the county has worked with several federal agencies, including the Corps, to strengthen pre- and post-disaster mitigation in the county.

While not a WRDA project, Tuolumne County, California, with a population of just under 54,000, is working with their utilities district to ensure an adequate water supply to approximately 90 percent of the county's residents and businesses. Currently, the only water source in the county for both irrigation and consumption is an old wooden flume and ditch system constructed in the 1850's that spans more than four miles in heavily forested lands near Stanislaus National Forest. Unfortunately, the Stanislaus National Forest is dramatically overgrown in the area containing the wooden flume, leaving it vulnerable to wildfire. Destruction of the flume would take more than 500 days to repair. This would completely devastate the local economy, which contributed nearly $2 billion to the national GDP in 2016. Further, the county serves several disadvantaged communities that would be particularly impacted by a major disaster.

Our nation's water infrastructure in the West is aging rapidly and replacement needs are fast outpacing available funds. According to the American Society of Civil Engineers (ASCE), infrastructure such as harbors and ports, inland waterways, dams, levees, water and wastewater, and roads and bridges are failing. This is especially relevant in the West where there are large tracts of land, which raises infrastructure construction costs significantly. Consider these facts from ASCE: California, Texas, North Carolina and Pennsylvania have the largest number of high-hazard dams; the highest drinking water infrastructure needs are in Montana, Idaho, New Mexico, North Dakota and South Dakota; and California has the highest total of known levees in need (9,560 miles).

Much of this infrastructure is constructed and/or maintained by local governments, but many of our systems and facilities were built over 75-100 years ago. With limited funding, it has been more challenging for local governments to undertake needed upgrades. In some cases, WRDA can be instrumental in helping counties upgrade these systems.

This is playing out all across the West with flood control, water and sewage projects in Missoula County, Montana; levee projects in Lander County, Nevada, Tulsa County, Oklahoma and Hill County, Montana; flood control in Cass County, North Dakota, and Clay County, Minnesota; and restoration projects in Kitsap County, Washington, to name a few.

The number of complex federal requirements and unfunded mandates on western counties has risen sharply, and directly impact water projects. While there are numerous federal laws that directly impact counties – like the Stafford Disaster Relief, Medicaid Inmate Exclusion, Affordable Care Act Excise Tax, Clean Air Act and the Clean Water Act – none impact western counties as much as the Endangered Species Act (ESA).

The ESA was enacted in 1973 with the promise that our nation could do a better job of protecting and conserving its resident species and the ecosystems that support them, and counties across the United States recognize the importance of the ESA as a safeguard for conserving our nation's wildlife, fish and plants. However, the requirements of the ESA often result in socioeconomic impacts that are shouldered squarely by local governments and our residents.

In Richland County, Montana, with a population of 11,960, agriculture is the county's economic backbone, contributing $926.5 million to the economy in 2016. The county's irrigation district, which provides water to agricultural users in the county, partnered with the Corps and the Bureau of Reclamation (Reclamation) on the Lower Yellowstone Project, which was authorized in WRDA 2007 for ecosystem restoration. Due to concerns over the pallid sturgeon's habitat, a species of fish protected under the ESA, several environmental groups sued. Though it took almost ten years, this case was recently resolved and the project will move forward this spring.

In Sonoma County, California, the County's Water Agency has partnered with the Corps on the Russian River Water Supply and Flood Control Project, which provides flood protection and drinking water to over 600,000 people in Sonoma and northern Marin Counties. In 2008, the

National Marine Fisheries Service (NMFS) issued a Biological Opinion (BO) listing 23 actions the agencies must undertake to protect three endangered species of salmon – the coho, steelhead and chinook – that were impacted by the project. The total cost is estimated at approximately $158 million ($60 million federal/$98 million non-federal).

Additionally, county water and transportation infrastructure projects in the East and West trigger review under the Corps Section 404 dredge and fill permit program. In recent years, the Section 404 permit program has been fraught with difficulties ranging from complex permit requirements; lengthy and costly permit reviews; inconsistent application of Corps rules across Corps districts; and general confusion by both the Corps and regulated entities over what types of waters and activities must obtain a Section 404 permit.

Based on our counties' experiences, while the jurisdictional determination process may create delays, lengthy and resource intensive delays also occur *after* federal jurisdiction is claimed. Once jurisdictional, the project triggers application of other federal laws like environmental impact statements, the National Environmental Policy Act (NEPA) and ESA. Additionally, there might be special conditions attached to the permit for routine ditch maintenance activities, even though these activities are supposed to be exempt under existing regulations. Many Corps offices have narrowly interpreted that the exemption does not apply to routine maintenance of sediment, debris and vegetation in flood protection facilities.

This narrow interpretation creates a dragnet capturing almost all routine flood maintenance work into permitting; increases Corps' workload; and causes significant permit backlog, thwarting counties' ability to perform flood maintenance. Permit approvals can take up to three years and Section 404 general permits are limited to five year terms and as a result, counties are in a constant costly cycle of permitting. Meanwhile, vegetation continues to grow and becomes habitat, triggering additional permits, mitigation and further delays.

These specific required conditions result in a lengthy negotiation process with counties. For example, a number of California counties have stated that process can easily take three or more years, with costs in the millions for a single project. A nationwide Section 404 permit to maintain San Diego Creek Channel in Orange County, California, required three years for approval, while flood protection was reduced to a ten-year protection level. Clearing 13 acres of vegetation cost $700,000 but required 20 acres of mitigation at a cost of $2.8 million. The mitigation cost was four times the maintenance cost.

Since 2007, the Borough of Alaska has been working with the Corps to secure a Section 404 permit to dredge and dispose of approximately 40,000 cubic yards of spoils in its harbor. It took seven years and over one million dollars spent on environmental studies to get the project approved. But, the requirements imposed by the U.S. Environmental Protection Agency on capping and monitoring ultimately made the project financially infeasible.

In Oregon, eight counties – Clatsop, Tillamook, Lincoln, Lane, Douglas, Coos, Columbia and Curry – have tide gates to drain tidelands areas for agriculture use. Landowners and tide gate

owners in those counties indicate that the federal and state permitting process can take years and involve six to seven agencies in both Oregon and the federal government. This is beyond the capacity of many landowners and small jurisdictions and threatens both public safety and local economies if repair and replacement projects cannot be approved in a timely fashion.

Ultimately, permitting delays magnify simple maintenance into complex and costly projects. This makes it more difficult for counties to complete projects to maintain public safety facilities and infrastructure, which places our residents and businesses at risk.

Due to arid conditions and drought in the West, many counties are actively working to mitigate the impact of drought on local communities. For over a decade, the West has been dealing with extreme drought. These challenges have had a disproportionately large impact on the ecological, social and economic life of our counties' residents. For example, fire seasons now last an average of 78 days longer compared to 40 years ago. These fires have devastated local communities, drained emergency management budgets, damaged valuable infrastructure and put further strain on local water resources. Drought conditions have also led to major water shortages in many communities, leaving them scrambling to respond.

Kings County, California is one of the counties in the Central San Joaquin valley dealing with drought. The county is located in a very productive farming region. In fact, the San Joaquin Valley holds roughly two-thirds of California's most productive farmland, and Kings County alone yielded over $2 billion in agricultural products in 2016. Behind this agricultural production, however, is a serious problem: the county's current water storage system is insufficient for the needs of the community, and some of the county's most disadvantaged communities simply no longer have reliable access to clean drinking water.

In Nye County, Nevada, a rural county of 42,477, comprised of 18,199 square miles, residents and businesses are currently facing water scarcity issues due to a lack of available water resources coupled with a rapidly growing population. Even though 73.5 percent of the county is federal lands, due to its proximity to Las Vegas, the county's population density has risen significantly in the past 20 years, and water resources have suffered as a result. In December, the state of Nevada prohibited the drilling of new residential wells. The county is trying to find new salvageable water resources for both local/regional alluvial and carbonate aquifers to supply increased demand.

WRDA helps local communities help themselves.

Prior to this testimony, NACo sent out an informal survey to our membership. One of the questions on the survey asked, "If the project had not been authorized through WRDA and/or technical assistance was not offered by the Corps, would the county have been able to undertake the project alone?" Overwhelmingly, both rural and urban counties indicated that they would not be able to move forward with projects without their partnership with the Corps.

Here is a sampling of their answers: Without the financial backing by the Corps, this 53-year old harbor would have continued to exponentially deteriorate; the Corps brought an expertise and funding that we did not have readily available; without the funding we received over the past five years, this would be impossible to achieve; it is unlikely that my county or the state would be able to sustain or undertake any beach construction projects without federal participation; there is no way my rural county could fund a $57 million fish bypass without Corps help; and the cost of the project is beyond our local capability and the results we expect to achieve would not be possible without the Corps and WRDA.

Without WRDA, our counties could not have accomplished the multitude of projects we have been able to carry out over the past several decades. Simply put, WRDA is a partnership that works.

To build upon past successes and address current challenges, there are a number of ways that Congress can improve and strengthen WRDA to help western counties.

In conversations with counties, it is clear that WRDA has helped tremendously in addressing key water needs with navigation channels, harbors and ports, inland waterways, dams and reservoirs, beach management, levee repair, aquatic ecosystems, flood emergency and water infrastructure projects. However, many counties note that there are remaining issues that make it more difficult for them to undertake and complete WRDA-related projects. These comments have included the following:

- Not enough funds are available to undertake water studies and projects;
- Corps studies take a long time (Note: each version of WRDA changes the rules for project implementation, creating additional funding obligations for local governments and lengthening the time needed to undertake the project);
- Federal requirements from other federal agencies under the National Flood Insurance Program (NFIP), ESA, and others often create conflicting federal requirements, outcomes and justifications;
- The existing Corps regulatory structure is cumbersome;
- Disconnect between agencies (i.e. Corps and FEMA on levees);
- While previous WRDA bills addressed specific concerns, the Corps has not released guidance for those bills, which slows our efforts to move forward with critical water infrastructure projects.

To address the above issues and improve WRDA's value for western counties, we respectively offer the following recommendations:

Authorize WRDA on a biannual basis: Historically, WRDA bills are passed every two years. However, in the past decade, these measures have become increasingly difficult to pass due to the congressional earmark ban. Only three WRDA bills — WRDA 2007, the Water Resources Reform and Development Act of 2014 (WRRDA) and the Water Infrastructure Improvements for the Nation Act of 2016 (WIIN) — have been enacted in the past decade.

NACo is grateful that Congress has kept WRDA on its two-year authorization schedule since 2014 and the nation's counties urge Congress to stay this course, approve a WRDA 2018, and we encourage Congress to authorize WRDA every two years moving forward.

Meaningful consultation with states and local governments will create greater consensus around and increase the effectiveness of the Corps overall: Throughout the testimony, we highlighted some of the challenges western counties have working with the Corps. We believe that many of these issues would be resolved if there were a better process for the Corps to engage with its state and local partners.

Over two decades ago, Congress passed the Unfunded Mandates Reform Act (UMRA) to address the impact of unfunded mandates. While UMRA resulted in progress in Congress, UMRA leaves the responsibility up to each administrative agency to develop its own consultation process and provides no uniform standards for agencies to follow. As a result, the requirement has been inconsistent and each agency's internal process is different.

To our knowledge, the Corps has no internal policy governing its interactions with its intergovernmental partners – state and local governments – nor do they have an Office of Intergovernmental and External Affairs (IEA) where counties, states, and other local governments and stakeholders can easily interface with the Corps. Many of the issues raised in this testimony could be prevented if the consultation process was improved.

To that end, we recommend that the Corps be required to comply with UMRA by consulting with state and local government partners early and often in policy discussions and urge Congress and the Corps to authorize and staff an Office of Intergovernmental and External Affairs within the agency.

Both of these options will work to break down existing barriers within the Corps and would also result in more pragmatic and successful strategies for implementing federal policies.

Increase overall authorized funding levels for the U.S. Army Corps of Engineers: Many water resource issues across the U.S. remain unaddressed because of the limited availability of funds.

Enhance the federal-state-local financial partnership for water resources projects: NACo supports federal matching funds for local governments to plan for reducing flood damage risks under WRDA. NACo asks that the federal share of water resource projects not be shifted to state and local governments because most state and local governments do not have the fiscal resources to assume the federal share.

Fix Section 404 permitting issues for public safety infrastructure: NACo supports efforts to streamline the current Section 404 permitting process to address the delays and inconsistencies that exist within the current decision-making process and to shorten the Corps timeline to review

and issue these permits. We recommend that the Corps provide a clear-cut, national exemption for routine ditch maintenance activities and remove routine maintenance of flood protection facilities and infrastructure from the Section 404 permit process when no endangered species habitat are present. We further recommend that permit terms for routine maintenance be extended from five to ten years and we ask that Congress set in place a mechanism in WRDA to allow counties and other local government partners to obtain new permits and modify existing non-controversial federal permits for construction and maintenance activities for flood control systems.

Continue focus on levee safety and management: Even though levees have been addressed in previous WRDA packages, including the National Levee Safety Program for levee rehabilitation, the Corps has yet to implement the program, indicating that this is due to a lack of funding or appropriations specifically for the program. We recommend that the Corps be instructed to release this report and guidance, with an opportunity for review and comment on the guidance now. This action is far overdue and public safety and the use of resources at the local levels are being threatened by this inaction. Additionally, we believe that additional funds should be allocated toward repair and rehabilitation of America's non-federal, publicly-owned levees (including those constructed in partnership with the Army Corps of Engineers and now operated and maintained by the non-federal partner).

Finally, while we know that the Corps vegetation management policy was addressed in a previous WRDA package, the agency has yet to act on it. We recommend that the Corps be instructed to release this report and guidance, with an opportunity for public review and comment. This action is overdue, and threatens our ability to effectively manage levees.

Address ongoing threats from high hazard dams: NACo supports increased federal commitment to fund the repair and rehabilitation of America's non-federal, publicly-owned dams, with priority funding given to structures presenting the highest risk of failure. Federal grants, loans and cost-share programs should be designed to assure that unsafe or deficient dams and levees are brought into compliance with national minimum safety standards. Finally, federal and state governments should consult with and include counties in the decision-making process when undertaking the rehabilitation of unsafe or deficient dams and levees located within the jurisdiction of the county.

Maintain focus on drinking water and wastewater needs: NACo supports the State Revolving Loan Fund (SRF) programs, the Clean Water State Revolving Loan Fund (CWSRF), and the Drinking Water State Revolving Loan Fund, as supplements to, and not a substitute for, federal grant programs. Grants and technical assistance should be made available to those small, rural, disadvantaged communities that are unable to meet their needs solely with loans. States should provide adequate funds to match federal grants to the SRF program and assure flexibility in the administration of such loans. NACo supports passage of legislation that codifies the U.S. Environmental Protection Agency's ("EPA") 2012 Integrated Municipal Stormwater and Wastewater Planning Approach Framework ("Integrated Planning Framework"), under which sewer districts can seek more efficient and affordable solutions to CWA compliance, and that

creates demonstration projects under which local communities will be allowed more flexibility in their efforts to comply with the regulatory requirements of the CWA.

We sincerely appreciate this Committee's leadership on the issue of Integrated Planning. This could prove to be a valuable tool for communities facing costly unfunded mandates. We would like to ensure that all communities are able to utilize this tool if needed.

Water conservation and storage: NACo supports federal water conservation strategies that provide federal financial and technical assistance to state and local governments to design, implement and evaluate appropriate water conservation measures, including the rehabilitation of water supply systems. Water conservation should be given priority in the planning and evaluation of water projects where there are limited sources of supply. Federal research and grant programs should focus on water reclamation, recycling, reuse and desalination.

Beaches, shorelines and sand replenishment: NACo supports additional authorization and funding for beach and dune restoration projects. Additionally, we urge Congress to enable the Secretary of the Corps to allow counties to acquire sand by purchase, exchange or otherwise from non-domestic sources for the purpose of beach renourishment.

Strengthening local ports and waterways: NACo supports the full expenditure of harbor maintenance trust fund collections on dredging and harbor maintenance, and providing equity for deep draft ports that contribute collections to the fund but do not have significant dredging needs by allowing them to utilize trust fund dollars for limited port-related uses other than dredging. We also encourage increased funding and regulatory relief to facilitate the revitalization, modernization and maintenance of port facilities, including legislation that ties the expenditure of harbor maintenance trust fund revenues to their intended purpose of harbor maintenance projects.

In conclusion

Even though communities have made significant strides in addressing water resource issues, our water needs and requirements in the West and across the nation have grown significantly.

To address these issues, Congress has the opportunity to revise and update WRDA in 2018 to ensure that local governments and other entities have the tools they need to move their communities seamlessly into the 21st century. Together, we can work together on a unique partnership that works to solve complex problems in a cost-effective way, to benefit both the national economy and local communities.

This concludes my remarks and I am happy to take any questions.

QUESTION FOR THE RECORD
The Honorable Bernie Sanders, Senator
U.S. Senate Environment and Public Works Committee
Hearing on America's Water Infrastructure Needs and Challenges
January 10, 2018

Questions for the Record for Julie Ufner, NACo

Ms. Ufner, you testified that we need to maintain a focus on drinking water and wastewater needs through federal grant programs. The American Society of Civil Engineers estimates that nationally, federal investments of at least $271 billion for wastewater infrastructure and $1 trillion for drinking water infrastructure are needed over the next 25 years. Can you please expand on the drinking water and wastewater infrastructure needs of rural and underfunded counties?

Senator Sanders, thank you for your question. There are 3,069 counties in the United States, 70 percent (approximately 2,200) are considered rural, with populations under 50,000, yet they often provide the same drinking water and wastewater services as their larger counterparts. However, as noted in your question, infrastructure needs and challenges are a huge concern for local governments. Many of our drinking and wastewater treatment facilities, including plants, pumps and pipes, have far exceeded their life cycle. Some of these systems were built over 75-100 years ago.

Further compounding the problem, over the past ten years alone, over $40 billion in mandated Clean Water Act wastewater and stormwater upgrades were required for communities both large and small. Since many of these systems are partially (or wholly) funded through user fees, this leads to a huge rate increase for our residents. To complicate matters, many user rate-based systems are in higher density areas, which tend to have larger populations of disadvantaged individuals. Meanwhile, smaller, rural/disadvantaged communities may also have higher per capita costs, which also result in higher, sometimes prohibitive, sewer rates for the smaller systems that serve them. This makes it very difficult for communities to replace existing infrastructure, while keeping rates affordable for their constituents.

This is an issue that our counties grapple with on a daily basis. We would be happy to explore potential solutions with you moving forward.

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According to the Natural Resources Defense Council, systems serving less than 500 people accounted for nearly 70 percent of all violations to the Safe Drinking Water Act and a little over half of all health-based violations. This means that rural Americans are disproportionately affected by drinking water contaminants. Rural communities, like those in Vermont, cannot afford to make these much-needed upgrades without help from the federal government. Without adequate water infrastructure investments, these rural municipalities face enforcement action from the Environmental Protection Agency for these violations. How should the federal government address this responsibility to provide needed funding for water infrastructure in rural counties?

The elimination of water pollution is a long-term process and there should be a reasonable relationship between costs and benefits to meet drinking water requirements. But, many rural and disadvantaged communities are facing aging infrastructure, increased mandates, limited technical capacity and more limited monies to meet these requirements. We would support federal efforts to provide more funds, such as grants and zero-interest loans, to both rural and disadvantaged communities. Additionally, we would urge the federal government to provide more in-depth technical assistance to those communities who many not have the expertise, nor the staff, to help them meet Clean Water Act requirements in a more cost-effective and efficient way.

Senator BARRASSO. Thank you very much, Ms. Ufner. We appreciate your being here today.

I would like to turn now to Mr. William Friedman, who is the Chairman-Elect of the American Association of Port Authorities.

Thanks so much for joining us today.

STATEMENT OF WILLIAM FRIEDMAN, CHAIRMAN-ELECT, AMERICAN ASSOCIATION OF PORT AUTHORITIES

Mr. FRIEDMAN. Thank you. Good morning, Chairman Barrasso, Ranking Member Carper, and members of the Committee. I want to thank you for the opportunity to provide remarks to the Environment and Public Works Committee on America's water infrastructure needs and challenges.

I am William Friedman, President and Chief Executive Officer of the Cleveland Cuyahoga County Port Authority, which we usually shorten to the Port of Cleveland, because that full name is a mouthful. The Port of Cleveland anchors northeast Ohio's maritime sector, which is a major economic contributor to our State and local economy. Maritime traffic in excess of 13 million tons annually through Cleveland harbor drives $3.5 billion in annual economic activity in our community and supports 20,000 jobs in our community as well.

I am also speaking on behalf of the American Association of Port Authorities, AAPA, as the Chairman-Elect of its Legislative Policy Committee that sets policy for our members. My remarks today will provide illustrative examples of water infrastructure needs faced by public ports and recommendations for WRDA legislation to improve the Corps of Engineers navigation program.

AAPA members appreciate that Congress understands the importance of our seaports' role in the U.S. economy. Constructing and maintaining the nation's 21st century maritime infrastructure is essential to the nation's economic future. Public ports and their private sector partners are committed to this challenge, with plans to invest upwards of $155 billion between 2016 and 2020, in port related facilities.

It is imperative that related infrastructure be a part of any broad infrastructure investment legislation the Committee develops. AAPA has identified $66 billion in potential waterside and landside investments over the next decade that will help assure the benefits from an anticipated $155 billion in port related capital infrastructure investments.

The waterside amount consists of full use of Harbor Maintenance Trust Fund revenues over the 10 year period, use of the $9 billion Harbor Maintenance Trust Fund surplus to restore Federal navigation channels, and $6.2 billion for the Federal share of cost share channel improvements authorized in WRDA 2014 and WIIN 2016, and projects that are currently being studied that will get authorized in the coming years.

AAPA believes a significant Federal investment would grow the U.S. economy, increase family wage supporting jobs, enhance America's international competitiveness, and generate additional tax revenues. I have provided two infographics which Senator Carper had pointed out at the outset of the hearing. Those are both available to you. They look like this. The first provides details on

the $66 billion needs, and the second infographic highlights the types of port related projects that can benefit from infrastructure investment legislation.

Turning to WRDA, it is vitally important that this legislation be passed on a 2 year cycle, as it enables both major and smaller policy changes and improvements to be made and navigation projects to be authorized. I look forward to the next WRDA legislation to continue making these improvements in the legislation.

I would point out AAPA's three key priority issues for the next WRDA as follows. First, WRDA 2014 was landmark legislation establishing a path to full use of the Harbor Maintenance tax revenues for its intended purposes, which is navigation channel maintenance. WRDA 2016 adjusted the annual funding target approach so that progress is made toward full HMT use each year. We are grateful the annual funding targets are currently being met by Congress through the appropriations process.

However, we maintain that the ultimate solution is for full HMT revenues to be provided directly to the Corps of Engineers. We appreciate the bills that have been proposed to address this issue. My fellow AAPA members and I are working on an approach that accomplishes full HMT revenue use that includes an industry supported spending formula.

No. 2, authorize and proceed to construct navigation project improvements recommended in Chief of Engineers' reports. This includes a project authorization change report for the Soo Locks major rehabilitation on the Great Lakes.

No. 3, past WRDAs include streamlining of the Corps of Engineers study process for navigation channel improvements. That has worked well. We think that additional streamlining improvements can be made in this upcoming WRDA. AAPA will submit a list of specific streamlining improvements to the Committee soon.

I commend the Committee leadership for recognizing the nexus between water resources development and economic prosperity. I urge you to develop and pass infrastructure investment in WRDA legislation at the earliest possible time. I would be happy to address any questions you might have for me.

Thank you very much.

[The prepared statement of Mr. Friedman follows:]

William D. Friedman
President and Chief Executive Officer
Cleveland-Cuyahoga County Port Authority

William D. Friedman became president and CEO of the Cleveland-Cuyahoga County Port Authority in June, 2010. Under Mr. Friedman's leadership, the Port of Cleveland has experienced a resurgence in maritime trade and long-sought diversification of cargo types. In 2014, the Port launched the Cleveland-Europe Express service, revitalizing shipping via the Great Lakes/St. Lawrence Seaway system and solidifying Cleveland's position as its leading international hub.

Mr. Friedman has more than 25 years experience in port management, real estate development, the international supply chain and multimodal distribution. He served as vice president, ports and logistics for Duke Realty Corp. from 2004 to 2009, helping the company expand to key port and inland logistics hubs including the Port of Savannah and the Rickenbacker Global Logistics Park in Columbus, Ohio.

Before joining Duke Realty, Mr. Friedman was CEO of the Ports of Indiana from 2000 to 2004, where he improved financial results, increased cargo volumes, and secured more private investment, resulting in a record $1.5 billion annual economic impact statewide.

Prior to that, Mr. Friedman spent 10 years with the Port of Seattle serving in a variety of management roles including director of seaport strategic planning, general manager of cargo piers and industrial properties, and senior harbor development planner. Mr. Friedman's work in Seattle enabled a $600 million expansion of one of the nation's primary container ports. Mr. Friedman is President of the American Great Lakes Ports Association and serves on numerous industry and civic boards including the Executive Committee of the American Association of Port Authorities, Green Marine, the Northeast Ohio Development Fund, the Northeast Ohio Areawide Coordinating Agency, and the Cuyahoga County Economic Development Commission.

Mr. Friedman holds two degrees from Indiana University -- a bachelor's degree in history, and a master's degree in public administration with a concentration in urban and regional planning.

Testimony by
Mr. William D. Friedman
President and Chief Executive Officer
Cleveland-Cuyahoga County Port Authority, Cleveland, OH
Chairman-Elect of the American Association of Port Authorities (AAPA)
Before the
U.S. Senate Committee on Environment & Public Works
Hearing on
America's Water Infrastructure Needs and Challenges
Wednesday, January 10, 2018
410 Dirksen Senate Office Building
10:00 AM

Chairman Barrasso, Ranking Member Carper and Members of the Committee, I want to thank you for the opportunity to provide remarks to the Environment and Public Works Committee on "America's Water Infrastructure Needs and Challenges." I'm William Friedman, President and Chief Executive Officer at the Cleveland-Cuyahoga County Port Authority, or Port of Cleveland as we are commonly called. The Port of Cleveland anchors Northeast Ohio's maritime sector, which is a major economic contributor to our state and local economy. Maritime traffic in excess of 13 million tons annually through Cleveland Harbor drives $3.5 billion in annual economic activity and supports 20,000 jobs in our community.

I'm also speaking on behalf of the American Association of Port Authorities, AAPA, as the Chairman-elect of its Legislative Policy Committee that sets policy for our U.S. Members. My remarks today will provide illustrative examples of water infrastructure issues faced by public ports and

recommendations for WRDA legislation to improve the Corps of Engineers navigation program.

AAPA members appreciate that Congress understands the importance of our seaports role in the U.S. economy. Constructing and maintaining the Nation's 21st century maritime infrastructure is essential to the Nation's economic future. Public ports and their private-sector partners are committed to this challenge, with plans to invest upwards of $155 billion between 2016 and 2020 in port-related facilities. At the Port of Cleveland, more than $43 million in anticipated capital investments have been identified during this time frame. In the Great Lakes region, our collective 5-year capital plans for infrastructure investments are in excess of $332 million.

Water infrastructure associated with seaports requires maintenance, rehabilitation and sometimes replacement. At the Port of Cleveland, we are embarking on a $20 million project to stabilize the Cuyahoga River Ship Channel at Irishtown Bend, which is in imminent danger of collapse. We seek cooperation with our federal partners on remedying this potential calamity to ensure unimpeded freight movement to support Ohio's largest steel mill and other industry. Additionally, we have invested significantly in our dredged sediment management and processing center. In partnership with the Corps of Engineers, we are executing innovative solutions to turn previously disregarded sediment into a beneficial commodity.

It is imperative that port related infrastructure be a part of any broad infrastructure investment legislation the Committee develops. AAPA has

identified $66 billion in potential federal waterside and landside investments over the next decade that will help assure the benefits from an anticipated $155 billion in port-related capital infrastructure investments. The water side amount consists of full use of HMT revenues over the 10-year period; use of the $9 billion HMT surplus to restore federal navigation channels; and $6.2 billion for the Federal share of cost-shared channel improvements authorized in WRRDA 2014 and WIIN 2016 and projects that are currently being studied that will get authorized in the coming years.

AAPA believes a significant federal investment would grow the U.S. economy, increase family-wage supporting jobs, enhance America's international competitiveness and generate additional tax revenues. I have provided two AAPA infographics with my written testimony, the first provides details on the $66 billion needs and the second infographic highlights the types of port related projects that can benefit from infrastructure investment legislation.

Turning to WRDA, it is vitally important that this legislation be passed on a two-year cycle as it enables both major and smaller policy changes and improvements to be made and navigation projects to be authorized. I look forward to the next WRDA legislation to continue improvements. AAPA's three key issues for the next WRDA are as follows:

1. WRRDA 2014 was landmark legislation establishing a path to full use of the Harbor Maintenance Tax revenues for its intended purpose, which is navigation channel maintenance. WIIN 2016 adjusted the annual funding target approach so that progress is made towards full HMT use each year.

We are grateful the annual funding targets are currently being met by Congress through the appropriations process. However, we maintain that the ultimate solution is for full HMT revenues to be provided directly to the Corps of Engineers. We appreciate the bills that have been proposed to address this issue. My fellow AAPA members and I are working on an approach that accomplishes full HMT revenue use that includes an industry supported spending formula.

2. Authorize and proceed to construct navigation project improvements recommended in Chief of Engineer's reports. This includes a Project Authorization Change Report for the Soo Locks Major Rehabilitation.

3. Past WRDA's include streamlining of the Corps of Engineers study process for navigation channel improvements and that has worked well. We seek additional streamlining improvements in this upcoming WRDA. For example, feasibility studies need to allow for initial scope and schedule discussions as well as clearly define study start and completion milestones. Another example is the negative impact of the Corps policy change on utility relocations. We urge the Committee to work with AAPA and the Corps on a workable solution. AAPA will submit a more extensive listing of specific streamlining improvements soon.

I commend the Committee leadership for recognizing the nexus between water resources development and economic prosperity. I urge you to develop and pass infrastructure investment and WRDA legislation at the earliest possible time. I'm happy to address any questions you have for me.

Senator BARRASSO. Thank you very much for your testimony, Mr. Friedman. We look forward to the questions in a little bit.

I would like to turn first to Ms. Nicole Carter, who is a Natural Resources Policy Specialist for the Congressional Research Service.

Thanks for joining us.

STATEMENT OF NICOLE T. CARTER, SPECIALIST, NATURAL RESOURCES POLICY, CONGRESSIONAL RESEARCH SERVICE

Ms. CARTER. Chairman Barrasso, Ranking Member Carper, and members of the committee, my name is Nicole Carter. I am a specialist at the Congressional Research Service in Natural Resources Policy. Thank you for inviting CRS to testify.

The Committee requested that CRS focus on the legislative process for a Water Resources Development Act, WRDA, and related issues in 2018. I will start with a WRDA primer, then discuss executive branch reports relevant to WRDA deliberations, and end with some broader context for water resource authorization and infrastructure deliberations in 2018.

Congress is often involved at the project level when it comes to the U.S. Army Corps of Engineers. Congress authorizes the Corps to perform specific projects to improve navigation, reduce flood damage, and restore aquatic ecosystems. Congress typically authorizes new Corps studies and projects in statute in an omnibus Corps authorization bill, a WRDA bill, prior to providing Federal funding.

Most authorities for previous WRDAs do not require reauthorization. A small number of time limited authorities and authorizations of appropriations end in 2018 and 2019. Authorization, however, does not guarantee Federal appropriations for a project.

Although Congress does not appropriate funds in a WRDA, WRDA provisions may affect the use of appropriations. For example, WRDA provisions have provided targets for navigation trust funds, and have established the non-Federal/Federal split of project costs. The timing of enactment of WRDAs has varied. WRDA 1986 marked the end of a decade long stalemate between Congress and the executive branch regarding cost sharing and user fees.

Since WRDA 1986 Congress has aimed to avoid long delays between the planning and the execution of projects. Biennial enactment of WRDA was roughly followed from 1986 until the early 2000s. Since then enactment has been less regular. An issue that complicated enactment in the 111th and 112th Congresses was how to develop a bill without congressionally directed, geographically specific activities, commonly referred to as earmarks. In response, the 113th Congress developed new reporting processes that I will discuss later.

The 113th Congress enacted the Water Resources Reform and Development Act of 2014. It expanded non-Federal opportunities to lead Corps studies and projects and authorized 34 new construction projects. The 114th Congress enacted the next WRDA in December 2016. It authorized 30 new Corps construction projects, as well as dozens of studies. WRDA 2016 was a title of a broader water authorization bill that covered a range of water infrastructure issues, including programs and activities of the Bureau of Reclamation and EPA. All 64 new Corps construction projects authorized in

WRDA 2014 and WRDA 2016 had a completed report by the Agency's Chief of Engineers.

Since WRDA 2016 five Chief's reports that recommend congressional authorization of new projects have been completed—two projects in Texas, two in Florida, and one in New York. An additional 12 to 18 Chief's reports may be completed by the end of 2018. Congress also uses WRDAs to authorize significant changes to previously authorized projects. The Corps is completing a report recommending an increase in the authorization of appropriations for the Savannah Harbor Expansion Project.

WRDA 2014 created a new process and requirement for the Secretary of the Army to annually collect and report on publicly submitted proposals for Corps studies and projects. The most recent annual report was delivered in March 2017. It includes 13 public proposals for new feasibility studies and modifications to existing projects. The deadline for the next annual report to Congress is February 2018.

Many topics may shape deliberations on water resource infrastructure in 2018, such as the use of two navigation trust funds and the safety and operation of Corps dams and levees. Three broad topics of relevance to deliberation in 2018 are infrastructure initiatives. How may a broad infrastructure initiative relate to authorized Corps projects and reinvestment in aging federally owned infrastructure?

Two, non-Federal expectations and partnerships; what will the Federal Government expect of non-Federal project sponsors in coming years? And what can non-Federal entities expect from the Federal Government in terms of partnering and financing of projects?

Three, floods. Recent disasters, including the 2017 hurricanes, have raised numerous questions, like how effective and efficient are current processes for identifying priority Federal investments to reduce the nation's flood risk?

Thank you. This concludes my statement.

[The prepared statement of Ms. Carter follows:]

Nicole T. Carter
Specialist in Natural Resources Policy in the CRS Resources, Science and Industry Division

She joined the Congressional Research Service in 2003. She provides research to Congress on domestic and international water resource policy, river management, flood and drought policy, and water technologies and research. She studied civil engineering at The University of Texas at Austin (BS) and engineering at Stanford University (MS, PhD).

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TESTIMONY

Statement of

Nicole T. Carter
Specialist in Natural Resources Policy

Before

Committee on Environment and Public Works
U.S. Senate

Hearing on

"Water Infrastructure Needs and Challenges"

January 10, 2018

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CRS TESTIMONY
Prepared for Congress

Chairman Barrasso, ranking member Carper, and members of the committee, my name is Nicole Carter. I am a Specialist in Natural Resources Policy at the Congressional Research Service (CRS). Thank you for inviting CRS to testify. The committee requested that CRS focus on the legislative process for a Water Resources Development Act (a WRDA) as well as related issues in 2018.

In serving the U.S. Congress on a nonpartisan and objective basis, CRS takes no position on legislation. CRS remains available to assist the committee in its development and consideration of water resource and other legislation.

I will start by providing a WRDA primer, then discuss executive branch reports relevant to WRDA deliberations, and end with some context for water authorization deliberations in 2018.

WRDA Primer

Congress is often involved at the project level when it comes to the U.S. Army Corps of Engineers (Corps). Congress authorizes the agency to perform geographically specific projects to improve navigation, reduce flood and storm damage, and restore aquatic ecosystems. Congress typically authorizes new Corps studies and projects in statute prior to providing federal funding. Congress generally authorizes these studies and projects, modifies existing project authorities, and provides policy direction to the agency in an omnibus Corps authorization bill, generally called a Water Resources Development Act. Authorization, however, does not guarantee federal appropriations for a study or project.

Most WRDA authorities do not require reauthorization; however, Congress for a limited, but growing, number of Corps authorities has established dates on which some authorities or their authorization of appropriations expire. A small number of these time-limited authorities and authorization of appropriations end in the 2018 and 2019 calendar years. WRDAs also have established deauthorization processes for incomplete Corps studies and unconstructed project elements.

Although Congress does not use WRDAs to appropriate funds, WRDA provisions may affect appropriations indirectly: for example, WRDAs have shaped how two navigation trust funds are used and have established the split of financial and other responsibilities between the federal government and the nonfederal project sponsors of Corps studies and projects.

The timing of enactment of WRDAs has varied. WRDA 1986 marked the end of a decade-long stalemate between Congress and the executive branch on cost-sharing, user fees, and environmental requirements for Corps projects. Since WRDA 1986, Congress has aimed to avoid long delays between the planning and the execution of projects. Congressional enactment of a WRDA biennially was roughly followed from 1986 until the early 2000s; since then, enactment has been less regular.

Controversial project authorizations and disagreements over the need for and direction of change in how the Corps planned, constructed, and operated projects contributed to WRDA bills not being enacted in the 107th, 108th, and 109th Congresses. In the 110th Congress, President George W. Bush vetoed WRDA 2007, indicating his view that it lacked fiscal discipline and failed to set priorities that focused on projects with the greatest merit and federal responsibility. However, Congress overrode the veto to enact WRDA 2007 (P.L. 110-114).

Since WRDA 2007, Congress has enacted two Corps authorization bills. An issue that complicated enactment of WRDA in the 111th and 112th Congresses was how to develop a bill without congressionally directed, geographically specific activities (commonly referred to as earmarks). In response, the 113th Congress developed reporting and oversight processes to identify new studies, projects, and project modifications for authorizations. The 113th Congress enacted the Water Resources Reform and Development Act of 2014 (WRRDA 2014; P.L. 113-121) in June 2014. In addition to the aforementioned process changes, this legislation authorized 34 construction projects with a combined federal construction

cost of $25.7 billion and modified several other Corps project authorities. It also expanded opportunities for nonfederal entities to lead projects and authorized the use of innovative financing approaches, including a pilot for public-private partnerships. The 114th Congress enacted the next WRDA as a title in the broader Water Infrastructure Improvements for the Nation Act (WIIN; P.L. 114-322) in December 2016. WRDA 2016 authorized 30 new construction projects at a federal cost of more than $10 billion, as well as dozens of studies identified through the new processes established in WRRDA 2014. Provisions in WRDA 2016 further altered how nonfederal project sponsors may participate in the financing of water infrastructure activities; other provisions changed authorities for crediting and reimbursing nonfederal entities for project-related expenditures.

Reports Relevant to WRDA Deliberations

Three principal types of reports from the executive branch that the 115th Congress may use in crafting a WRDA bill are

- reports by the Chief of Engineers recommending new construction projects;
- executive branch reports proposing modification to authorized projects; and
- the Secretary of the Army's annual reports to Congress pursuant to Section 7001 of WRRDA 2014.

Chief's Reports for New Construction Projects

In 1954, Congress established a policy to generally base construction authorizations for Corps projects on completed feasibility reports that are favorably recommended by the Chief of Engineers (33 U.S.C. §701b-8). Each of the 64 new project construction authorizations in WRRDA 2014 and WRDA 2016 was based on a completed report by the agency's Chief of Engineers. A Chief's Report is informed by a final agency feasibility report and documentation assessing environmental impacts.

Since enactment of WRDA 2016, the Chief of Engineers has completed reports for five projects recommended for congressional construction authorization:

- Houston-Galveston Navigation Channel, TX (navigation);
- Sabine Pass to Galveston Bay, TX (hurricane and coastal storm damage reduction);
- St. Johns County, FL (hurricane and coastal storm damage reduction);
- St. Lucie County, FL (hurricane and coastal storm damage reduction); and
- Mamaroneck and Sheldrake River Basins, NY (flood risk management).

The cost associated with each of these projects varies; they range from less than $15 million to more than $3 billion. Based on data from the Corps in October and December 2017, an additional 12 to 18 Chief's Reports may be completed by the end of calendar year 2018. Some of these projects are in areas affected by hurricanes in 2017.

Reports for Modifications to Authorized Projects

Congress also authorizes in WRDAs significant changes in either the construction costs or project features of previously authorized projects.

Increases in Authorization of Appropriations

If a Corps project has experienced growth in construction cost above a certain threshold, Congress must authorize an increase in the authorization of appropriations. This requirement is pursuant to Section 902 of WRDA 1986, as amended (33 U.S.C. §2280), which generally allows for increases in total project costs of up to 20% (after accounting for inflation of construction costs) without additional congressional authorization. If the allowable threshold in cost increases is exceeded, the Corps typically pursues an increase in the authorization of appropriations (known as a "902 fix") and will not proceed with new contracts for the project until the amended authorization is enacted. The Corps has completed a report recommending that Congress increase the authorization of appropriations for the Savannah Harbor Expansion Project. CRS was unable to obtain from the Corps information on other pending and anticipated Administration reports recommending congressional increases in authorization of appropriations.

Changes to Project Features

CRS was unable to identify any pending completed reevaluation reports by the Corps that recommend project modifications (other than 902 fixes) that have been submitted to the authorizing committees or that are anticipated in calendar year 2018.

Section 7001 Annual Reports

Section 7001 of WRRDA 2014 required the Secretary of the Army to report annually to the authorizing committees on publicly submitted proposals for Corps studies, project authorizations, and project modifications; the Section 7001 annual reports also include completed executive branch reports for activities that require congressional authorization. Congress included in WRDA 2016 authorizations for studies of new projects and project modifications based on public proposals submitted through the Section 7001 process and identified in Section 7001 annual reports submitted in 2015 and 2016.

The most recent Section 7001 annual report was delivered to the authorizing committees in March 2017; it includes 13 public proposals for new feasibility studies and project modifications. The deadline in statute for the next Section 7001 annual report to be submitted to the authorizing committees is February 1, 2018.

Context for Deliberations in 2018

Many topics may shape deliberations on water resource authorizations in 2018, including the use of the two navigation trust funds, the operation of Corps dams for water supply and recreation, and civil works permissions and permits for high-profile public and private infrastructure projects. Three broad topics of relevance to deliberations in 2018 on Corps and water resource projects are an infrastructure initiative, nonfederal expectations and partnerships, and floods and disasters.

Infrastructure Initiative

Water project authorization deliberations may be taking place at the same time as efforts to develop and move a broader infrastructure initiative. Related questions for federal policymakers are, How may a broad infrastructure initiative relate to authorized Corps water resource projects and to investments in aging federally owned infrastructure? If Corps projects are part of an initiative, how would nonfederal cost-shares and contributions to trust funds for water resource projects factor into an infrastructure investment initiative? Would the initiative support Corps projects of the traditional type, or would the initiative promote new funding and project delivery arrangements for water resources projects? Historically, the

Corps has led the design and construction of its projects; nonfederal project sponsors traditionally participate in but do not lead project planning and construction for Corps projects. The Corps generally has not participated in water resource projects by providing grants or loans. Expanded and new authorities in WRRDA 2014 and WRDA 2016 allow nonfederal entities to lead in some or all aspects of an authorized Corps project. WRRDA 2014 also expanded the authority for nonfederal financing opportunities for water resource projects. WRRDA 2014 established the Water Infrastructure Finance and Innovation Act (or WIFIA) authority to provide direct loans and loan guarantees to nonfederal entities for partial funding of certain qualifying water infrastructure projects. WRRDA 2014 also authorized various pilot efforts for nonfederal study and project leadership and public-private partnerships. The Corps has faced various challenges in developing guidance and determining a path forward for agency participation in public-private partnerships and WIFIA. While the U.S. Environmental Protection Agency (EPA) has published guidance, received appropriations, and issued a request for projects to begin implementing the EPA-WIFIA program, the Corps-WIFIA program has no published guidance or federal funding. The final WIFIA authorization of appropriations for the Corps and EPA is for FY2019.

Nonfederal Expectations and Partnerships

Numerous Corps projects authorized for construction by previous Congresses have yet to receive federal funds to begin construction. Some $75 billion in authorized Corps construction projects and an additional $20 billion in Corps dam safety work are eligible for annual Corps construction appropriations, which have averaged $1.8 billion in recent years. In response, Congress has attempted to advance navigation, ecosystem restoration, and levee projects by allowing nonfederal entities to work on and fund projects by expanding credit and reimbursement opportunities, with few changes to the underlying federal-nonfederal division of costs. The Government Accountability Office (GAO) in December 2016 reported that nonfederal sponsors have led or are leading $4 billion in Corps-related studies and projects and that the federal government has reimbursed $400 million to cover some of the federal costs related to these projects. GAO did not report what would be the total reimbursement level to cover the federal cost-share associated with these studies and projects. What will the federal government expect of nonfederal project sponsors in coming years, and what can nonfederal entities expect from the federal government?

Floods and Disasters

Local and regional floods and hurricanes in recent months and years have illustrated the nation's flood risk and its economic and social costs. Dam safety concerns (e.g., failing spillways at California's Oroville Dam and Puerto Rico's Guajataca Dam) have raised questions regarding the condition and performance of the nation's existing water infrastructure. Nonfederal and federal liability questions associated with flooding and flood control projects (e.g., Corps-operated Addicks and Barker reservoirs near Houston, Texas) are shaping discussions regarding who will pay for and be responsible for the next generation of flood risk reduction infrastructure and flood recovery efforts. In recent years, through supplemental appropriations, Congress not only has funded the emergency response and repair activities of the Corps, but also has provided the Corps with funding to study and construct projects that reduce flood risks in areas recently affected by natural disasters. Potential questions that may shape water infrastructure authorization deliberations in 2018 include the following:

- How effective and efficient are current project development and funding processes for identifying and supporting priority investments to reduce the nation's flood risk?
- What are the federal roles and priorities for flood risk management investments, and how may these roles and priorities be shaped by efforts to respond to and recover from recent hurricanes and floods?

- What incentives and disincentives to prepare for floods and manage flood risks do federal projects and programs provide to U.S. states, territories, tribes, local governments, private entities, and individuals?

This concludes my statement. I would be happy to answer any questions you may have.

Coastal Flood Resilience: Policy, Roles, and Funds

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July 6, 2015 (IF10225)

Congress and other policymakers are faced with how to cost-effectively reduce coastal flood risk. Issues include how to coordinate action and assign responsibilities for preparedness, mitigation, response, and recovery; who bears the cost of impacts and long-term adjustments; and how to finance actions to improve coastal flood resilience.

States largely determine whether the approach to coastal flooding is to protect (e.g., constructed dunes, gates), accommodate (e.g., elevate structures and infrastructure), or avoid and retreat (e.g., rolling easements that allow the shore to migrate inland). A state's approach can have implications for disaster resilience (including for public infrastructure), demand for federal assistance, and patterns and rates of recovery. Federal programs and policies can provide incentives or disincentives for nonfederal investment in coastal planning and risk reduction. The past decade has been marked by increased federal emergency funding for areas hit by coastal storms and increasing federal aid as a share of hurricane damages: 6% in 1955, 50% in 2005, 69% in 2008, and more than 75% in 2012 (see National Research Council, *Reducing Coastal Risk*, 2014). To what extent various federal programs and funds promote resilience (i.e., ability to recover from disruptions and adapt to changing conditions) is the subject of debate.

Coastal Flood Development and Risk

U.S. coastal development historically was dominated by urban areas with ports and defense installations, such as Miami and Tampa–St. Petersburg, Florida; New York City/Newark, New York and New Jersey; New Orleans, Louisiana; and Virginia Beach, Virginia. More recently, smaller settlements have transformed into higher-density resorts and urban complexes. The resulting trend is for coastal flooding to threaten greater proportions of the nation's population, infrastructure, and investments. The flood hazard is shaped by a locale's meteorologic, hydrologic, and geologic conditions and by broader trends in sea levels and conditions. Flooding occurs with not only storms but also regular high tides that produce "nuisance"

flooding. In 2014, the National Oceanic and Atmospheric Administration (NOAA) identified nonlinear increases in coastal nuisance flooding.

Flood vulnerability and consequences are shaped by land use and building code practices, and investments in nonstructural protection (e.g., natural dunes, wetlands) and structural measures (e.g., barriers/gates, engineered dunes). Considerable variation exists across states and among local jurisdictions in the adoption, use, and enforcement of these measures. Variation also exists in the effort to maintain functional and intact wetlands and coastal forests as defenses from erosion and flooding. A U.S. Environmental Protection Agency (EPA) report estimated the potential future economic impacts of storm surge and sea-level rise on U.S. coasts cumulatively during this century at $5 trillion (2014 dollars, discounted at 3%), if no adaptation measures are implemented; these impacts drop to $0.8 trillion if investments are made in cost-effective adaptations and protections (see EPA, *Climate Change in the United States: Benefits of Global Action*, 2015). Awareness of flood risk and its long-term fiscal impact historically has proven insufficient to motivate pre-disaster land use changes and investments in mitigation and protection.

Federal Assistance

Most coastal flood-related federal spending since 2005 has consisted of emergency funds concentrated on storm-damaged areas, rather than competitively distributed. Support through the annual federal appropriations process typically has been for planning and technical assistance, with some cost-shared investment in mitigation and protection. For most years, annual spending for these activities has totaled less than $200 million nationally for agencies with related missions: NOAA, Federal Emergency Management Agency (FEMA), and U.S. Army Corps of Engineers (Corps), as described below. State and local spending data on coastal flood activities is not available.

National Oceanic and Atmospheric Administration

NOAA conducts a broad variety of activities that support coastal resilience including scientific research, data collection and monitoring, and coastal and ocean management. The Office for Coastal Management and its Coastal Zone Management, Coral Reef Conservation, Digital Coast, and National Estuarine Research Reserve programs are the core of NOAA's coastal resilience efforts. The Coastal Zone Management Act (CZMA) provides planning and technical services to assist states in protecting, restoring, and developing coastal communities and resources. Under CZMA's voluntary program, states and territories develop coastal management plans. Once these plans are federally approved, states become eligible for grants, and federal actions in the coastal zone are required to be consistent with state plans. Management of development in high-hazard areas is a key element of most state plans. CZMA grants are used to support state efforts to reduce damages caused by coastal hazards ($17 million in FY2014). In 2015, NOAA established the Regional Coastal Resilience Grants program to build community, ecosystem, and economic resilience, and it uses Digital Coast and its partnerships to provide state and local coastal managers with data, mapping services, training, and case studies.

Federal Emergency Management Agency

FEMA's most prominent roles in coastal resilience are through the Hazard Mitigation Grant Program (which is funded based on a formula derived from individual declared disaster expenditures) and the Pre-Disaster Mitigation program (PDM, which is annually appropriated).

In recent years, the PDM program has been funded at $25 million to $30 million annually. After years of not requesting PDM funds, the Administration requested $200 million for FY2016, signaling its increasing support for mitigation. Other efforts to support resilience through mitigation include FEMA's incorporation of sea-level rise into the benefit-cost analyses used to evaluate mitigation projects. Also, pursuant to the 2013 E.O. 13653, FEMA in 2015 updated guidance to require that state hazard mitigation plans (which are required for mitigation funding eligibility) as of 2016 consider long-term risk probabilities of future hazard events as well as changing future conditions.

U.S. Army Corps of Engineers (Civil Works)

Since the 1950s, Congress has authorized the Corps to construct specific coastal storm damage reduction projects. The Corps also provides flood risk reduction technical assistance and leads the interagency Silver Jackets program, which is operating in 44 states. Silver Jackets consists of state-specific partnerships that focus federal assistance on state flood priorities. In response to congressional direction, the Corps published a concept for a comprehensive response for the North Atlantic coast in 2015. The broad vision, strategy, and priorities for the federal role in coastal storm damage reduction projects nonetheless remain ill-defined. There is no guiding policy for categories of projects—shoreline protection, erosion control, and tide-related measures—although at congressional direction the agency constructs such projects.

Since 2005, Corps coastal storm damage reduction funding has been dominated by the $20 billion in emergency funds concentrated on projects in areas affected by Hurricanes Katrina and Sandy. The demand for Corps construction projects is much greater than annual appropriations. The Corps coastal storm damage reduction annual appropriations for FY2009 to FY2015 totaled $0.6 billion (nominal dollars). The 113th Congress (P.L. 113-121) authorized expanded flexibility and opportunities for financing Corps projects (e.g., public-private partnerships, loan guarantees). What role these new authorities may play in enabling investments in coastal resilience projects remains unknown.

Other Federal Assistance and Activities

Timely and accurate information on coastal flooding can alter the near-term human impacts (e.g., by informing local evacuation) and long-term property losses (e.g., by providing estimates of combined effects of sea-level rise and storm surge). In 2015, the National Hurricane Center is to test new storm surge watch and warning maps. Coastal flood science relies on federal investments in data from remote observations (e.g., satellites), surface observations, and complex models. Notable gaps remain in understanding current and future coastal flood risks.

Significant public infrastructure is vulnerable to coastal floods. Flood resilience efforts are under way for highways and transit through the Department of Transportation; water utilities through EPA; and energy systems through the Department of Energy. In 2014, the Department of Housing and Urban Development initiated a $1 billion National Disaster Resilience Competition using Hurricane Sandy supplemental funding in which state and local government applicants engage in risk assessment and planning activities. Winning applicants are to be selected for design and implementation funds. Another federal funding source for Gulf of Mexico coastal infrastructure projects derives from the Deepwater Horizon oil spill settlement.

Many Obama Administration coastal resilience actions are related to climate change efforts. E.O. 13690 established a federal flood risk management standard for federal actions. The State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience has recommended how to remove barriers to resilient investments and modernize federal grants and loans.

Policy Challenges and Questions

In 2014, the National Research Council recommended developing a unifying policy on coastal risk and assessing the nation's risk, and the American Society of Civil Engineers published *Flood Risk Management: Call for a National Strategy*. In 2013, the Association of State Floodplain Managers Foundation recommended a holistic coastal approach to achieve resilience. Such recommendations raise a basic question: How can local conditions and state and local autonomy be respected while attempting to both control federal disaster costs and create consistent, equitable policies that promote accountability and reward proactive resilience actions? To address this challenge, some stakeholders are pursuing innovations in project financing, especially for projects that integrate natural and built coastal environments that cut across traditional federal agency missions and programs. Others are concerned with more clearly defining federal and nonfederal responsibilities.

Other challenging policy questions include the following: What role could federal, state, and local tax reform and flood insurance have in eliminating incentives that increase coastal flood risk? Are federal policies promoting appropriately resilient adaptations for long-term community resilience? What are the lessons from the federal assistance restriction for certain areas under the Coastal Barrier Resources Act of 1982 (P.L. 97-348)? What would a coastal risk management assessment identify as priority data and mitigation investments? What are the coastal flood liability concerns associated with federal projects and activities? How will the federal government address the financing challenge of protecting federally owned properties, assets, and their functions? Would changes to federal involvement in disaster response and recovery alter state and local decisions and investments so that coastal resilience is a local enterprise receiving national assistance?

Water Resource Issues in the 115th Congress

January 13, 2017 (R44738)
Jump to Main Text of Report
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Summary

The 115th Congress faces various water resource development, management, and protection issues. Water resource activities generally encompass navigation improvements, flood damage reduction measures, water supply augmentation, hydropower generation, and aquatic ecosystem restoration. Congressional actions shape reinvestment in aging federal infrastructure (e.g., dams, locks, and levees) and federal and nonfederal investment in new projects. The principal agencies involved in federal water resource infrastructure are the U.S. Army Corps of Engineers (Corps) and the Department of the Interior's Bureau of Reclamation (Reclamation).

Oversight of Enacted Legislation. Water resource issues during 115th Congress are shaped in part by legislation enacted in earlier Congresses. The 114th Congress passed a broad water bill in December 2016—the Water Infrastructure Improvements for the Nation Act (WIIN or WIIN Act; P.L. 114-322)—that addressed water resource and water quality issues. Of its water resource provisions, WIIN

- authorized a broad array of water resource activities for the Corps;
- addressed selected Department of the Interior water issues, including Reclamation projects and related water project management in California and other western states and management of selected Indian water projects; and
- authorized various regional aquatic ecosystem restoration activities.

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Some of WIIN's Reclamation-related provisions on water conveyance and supply in California in particular remain the subject of attention by federal and local policymakers. Supporters of the WIIN provisions view these provisions as a compromise that may deliver greater water supplies to users; critics suggest that the provisions may alter environmental protections in California, thereby potentially harming threatened and endangered species, and that they may alter Congress's ability to oversee new projects. For more on WIIN, see CRS In Focus IF10536, *Water Infrastructure Improvements for the Nation Act (WIIN)*, by Nicole T. Carter et al.

- Improving Drought and Flood Preparedness and Response

Water Resource Issues in the 115th Congress. The 115th Congress may consider legislative proposals on water resource issues that were not addressed by WIIN, including those in legislative proposals considered but not enacted in previous Congresses. Congressional deliberations are within the context of broad issues shaping federal water resource activities. Areas of interest include the following:

- financing investments in water resource infrastructure,
- changing federal partnerships,
- funding and authorizing projects and the earmark debate,
- restoring aquatic ecosystems, and
- improving drought and flood preparedness and response.

Within these broad issues, potential topics of congressional interest include authorization of additional studies and projects; public and private hydropower improvements; aging water infrastructure rehabilitation; recreational activities at federal projects; water research and science investment and coordination; and environmental requirements, including protection of threatened and endangered species. The 115th Congress also may consider issues that arise at the regional or local levels but have some federal involvement. For example, Congress may engage in policy debates and oversight related to the Columbia River, the Sacramento and San Joaquin River basins, the Colorado River, and the Southeast's Apalachicola-Chattahoochee-Flint Basin due to the role of federal infrastructure and other efforts in these areas. Additionally, budget and appropriations issues often play a key role in directing each agency's activities and priorities.

Introduction

The 115th Congress is likely to face numerous water resource issues as it conducts oversight and deliberates on authorizations and appropriations legislation related to water resource development, management, and protection. These issues may include how to make investment decisions in the face of fiscal constraints; how to maintain and reinvest in an aging portfolio of federal infrastructure (e.g., dams, locks, and levees); how to effectively respond to and prepare for floods and droughts; and how to distribute investment between activities to meet new demands for water supplies, navigation, flood management, and aquatic ecosystem restoration and protection.

Water resource issues often arise at the regional level but have a federal connection. The crux of many of these challenges is how to balance competing demands for water and river ecosystem management. These include how to cope with the budget limitations and the effects of federal project operations on the environment, such as impacts on threatened and endangered species. These operations often become particularly contentious during droughts and floods.

This report first discusses recent congressional activity and possible issues for the 115th Congress. Next, it provides an overview of the federal role in water resource, including a discussion of the two major federal water resource agencies—the U.S. Army Corps of Engineers (Corps) and the Bureau of Reclamation (Reclamation)—and related legislation. The report then provides an overview of broad policy issues, including financing investments in water resource infrastructure, changing federal partnerships, funding and authorizing projects and earmark policies, restoring aquatic ecosystems, and improving drought and flood preparedness and response. This report does not address municipal water systems, municipal wastewater infrastructure, or environmental protections, such as water quality and wetlands regulations.[1]

Congressional Activity

In the water resource area, legislative activity often is specific to the federal water resource management agencies or to water use by particular sectors, including energy, agriculture, navigation, recreation, and municipal and industrial use. Occasionally, Congress takes up broader water resource policy issues, such as coordination of federal water resource activities and programs.

Legislation Enacted in the 114th Congress

The 114th Congress authorized a broad range of water resource and water quality activities through the Water Infrastructure Improvements for the Nation Act (WIIN or WIIN Act; P.L. 114-322), which was signed into law on December 16, 2016. WIIN combined Corps-related provisions typically found in a Water Resources Development Act (WRDA) with provisions addressing other water issues—California drought, drinking water infrastructure and emergencies, and water-related waste and spills concerns—among other things. Some WIIN provisions had broad support; others were related to more controversial issues and legislation.

WIIN authorized 30 new Corps construction projects at a federal cost of more than $10 billion. It also altered other Corps policies and authorities, including those related to how nonfederal sponsors participate in water infrastructure activities. Another noteworthy change in the bill was the expansion of a previously authorized U.S. Environmental Protection Agency (EPA) authority to operate a credit program for nonfederal water projects, originally authorized as the Water Infrastructure Finance and Innovation Act (or WIFIA; Title V, Subtitle C of P.L. 113-121). The WIIN Act amended the existing authority to allow EPA to fund some water resource-type projects.

Among the most controversial WIIN Act provisions were those related to California drought and the operations of Reclamation facilities as directed under Title III, Subtitle J (titled "California Water"). Related proposals had been the subject of considerable debate in the 114th and prior Congresses. The subtitle addressed the drought in California by adjusting the authorization and management of federal and state water projects, increasing the authorization of appropriations for new and existing drought-related programs, and altering related fish and wildlife management. Although some Title III WIIN provisions had widespread support, controversy persisted over how WIIN approached Endangered Species Act (ESA) implementation, particularly water management under federal biological opinions (also known as BiOps) designed to protect threatened Delta smelt, endangered salmon, and other species.[2] Title III also included contentious provisions that authorize Reclamation to proceed with or provide support to new water storage projects under certain circumstances.

Finally, WIIN authorized or expanded existing authorizations for several ecosystem restoration initiatives. It authorized the Great Lakes Restoration Initiative, an existing interagency initiative coordinated by EPA, at $300 million annually from FY2017 to FY2021. It also authorized restoration activities in the Missouri River Basin, Salton Sea, Chesapeake Bay, Columbia River Basin, Lake Tahoe, and Delaware River Basin.

The 114th Congress also enacted regular appropriations for the Corps and Reclamation as well as supplemental appropriations for the Corps.[3] In contrast to most agencies, Congress has provided more funding for the Corps and Reclamation than requested by the President. Prohibitions on the addition of site-specific project line items added by Congress (i.e., earmarks) have complicated traditional congressional increases for individual projects.[4] In lieu of project-based increases, the 114th Congress included additional funding for selected categories of Corps and Reclamation projects. Overall, appropriations for both the Corps and Reclamation increased during the 114th Congress.[5]

Water Resource Considerations for the 115th Congress

The 115th Congress may address some measures left pending at the end of the 114th Congress, as well as consider new legislative proposals. Topics that may garner congressional attention include

- federal and nonfederal financing for water resource infrastructure investments, particularly for rehabilitating, repairing, or removing aging infrastructure and augmenting water supplies through dam construction, water reuse, desalination, and agricultural and urban stormwater capture;
- federal permitting and approvals affecting federal and nonfederal water resource projects and activities;
- oversight of WIIN implementation and funding for WIIN-authorized activities;
- authorization of new federal water projects and studies transmitted to Congress after enactment of WIIN;
- federal role and process related to water resource project development and approval, including at the regional and watershed levels;
- private infrastructure development and public-private partnerships;
- role of ecosystem and environmental protections, including efforts to comply with the ESA, in water resource management;
- invasive species, such as the Asian carp, and harmful algal blooms;
- oversight of regional aquatic ecosystem restoration efforts; and
- efficacy of federal navigation improvements in inland waterways and coastal harbors (e.g., Gulf Coast and East Coast harbors' ability to accommodate larger vessels transiting the Panama Canal).[6]

The 115th Congress also may address issues in particular river basins. Due to multiple factors, such as drought in portions of the West and Southeast, floods, legal decisions, or agency developments, certain basin issues are particularly likely to receive congressional attention. These issues include the operation of federal reservoirs on the Sacramento and San Joaquin Rivers (Central Valley Project in California) and on the Missouri River and its tributaries. In addition, the 115th Congress may engage in discussion of how threatened and endangered species designations and related critical habitat and environmental mitigation requirements

affect water resource project construction and operations in particular basins. Other river basins with regular congressional interest include the Colorado, Klamath (California and Oregon), and Rio Grande River Basins. Future operation of Corps facilities on the Columbia River and its tributaries is central to discussions that are under way regarding modification of the Columbia River Treaty with Canada.[7]

Regarding ecosystem restoration activities, the 115th Congress may conduct oversight of restoration efforts in the Everglades, Gulf Coast, Great Lakes, and elsewhere. Common themes in regional ecosystem restoration efforts might include oversight of ongoing restoration initiatives, protection of threatened and endangered species, effects of drought and flood on habitat, and concerns about water quality (e.g., harmful algal blooms).

The 115th Congress also may react to efforts by the Corps and Reclamation, as well as other agencies, to implement updated planning guidance for federal water resources projects and guide federal investment in floodplains.[8] Similarly, Congress may respond to the Obama Administration's efforts to incorporate climate change adaptation into agency plans and actions, including those of the Corps and Reclamation.[9]

In addition, Congress may address drought assistance, planning, and preparedness through oversight hearings and legislation (e.g., Energy and Water Development appropriations),[10] especially if drought conditions in California,[11] other parts of the West, and elsewhere persist or intensify.

The 115th Congress may consider the status and priority of federal efforts to restore large-scale aquatic ecosystems that have been altered or impaired by development, habitat loss, and federal water resource projects. Some of these restoration initiatives include those in the Florida Everglades, California Bay-Delta, Great Lakes, Gulf Coast, Chesapeake Bay, and Klamath Basin. The 115th Congress may consider a number of issues pertaining to these ecosystems, such as

- legislation to authorize a framework for governance and a comprehensive restoration plan for California's Salton Sea;
- oversight over the implementation of restoration activities in the Everglades and Gulf Coast region; and
- policies to streamline authorizations to allow for more projects to be implemented in conjunction with ecosystem restoration initiatives and to allow for greater use of public-private partnerships.

Funding for existing and new restoration initiatives may face challenges in the 115th Congress. Congressional focus might hone in on evaluating existing initiatives to determine how efficiently funds are being spent and whether restoration efforts are reaching their objectives. Ecosystem restoration initiatives that include efforts to manage water resources and conserve listed species under ESA might be evaluated for how well they meet demands for water resources and the conservation needs of species. (See "Improving Drought and Flood Preparedness and Response.")

Federal Role in Water Resources

The federal government has long been involved in efforts to facilitate navigation, expand irrigation, and reduce flood and drought losses. For example, nearly every large river basin in the country—from the Columbia, Sacramento, and Colorado Rivers in the West to the Missouri,

Mississippi, and Delaware Rivers—contains one or more federal dam or navigation project. These projects have largely been constructed by the Corps and Reclamation. More recently, federal involvement has expanded to include municipal water supply development and efforts to protect water-related resources, such as fish and wildlife, and to support recreation. Increasing pressures on the quality and quantity of available water supplies have resulted in heightened local and regional water-use conflicts throughout the country, particularly in the West and Southeast. Pressures include population growth; environmental regulation; in-stream species and ecosystem needs; water source contamination; agricultural and energy water demands; climate change and variability; and changing public interests, such as heightened demand for in-stream recreation.

Congress historically has played a role in water resources through authorization of and appropriations for regional and site-specific projects and activities; however, numerous water resource responsibilities are split or shared with state, local, and tribal governments, particularly those related to water allocation and resource planning and management.

Congress establishes the policies that define the federal role in planning for federal water resource projects and provides direction and funding for construction, maintenance, repairs, and rehabilitation. Congress makes these decisions within the context of multiple and often conflicting objectives, competing legal decisions, long-established institutional mechanisms (e.g., century-old water rights and contractual obligations), and in response to events such as floods, droughts, and structural failures.

The number of federal water resource construction activities decreased during the last decades of the 20th century, marking the end of earlier expansionist policies that had supported large federal up-front investments in dams and hydropower facilities, navigation locks and channels, irrigation diversions, and flood-control levees, as well as basin-wide planning and development efforts. Fiscal constraints, changes in national priorities and local needs, few remaining prime construction locations, and environmental and species impacts of the construction and operation of federal projects all contributed to this shift. Although these forces are still active, recent drought, flood, and development pressures have contributed to increased proposals for renewed federal financial and technical assistance for new works and for reinvestment in the aging stock of existing water resource infrastructure.

Federal Water Resource Agencies

Most of the large dams and water diversion structures in the United States were built by, or with the assistance of, Reclamation or the Corps. Historically, Reclamation projects were designed principally to provide reliable supplies of water for irrigation and some municipal and industrial uses. Corps projects are planned primarily to improve navigation and reduce flood damages, while power generation, water supply, and recreation often are included as secondary or incidental benefits. Reclamation currently manages hundreds of dams and reservoirs in 17 western states.[12] These projects provide water to approximately 10 million acres of farmland and 31 million people. Reclamation also operates 58 power plants capable of producing 40 billion kilowatt-hours of electricity annually (enough for approximately 3.5 million homes), which generate more than $1 billion in revenues annually.[13] The Corps operates nationwide, and its activities are diverse. The Corps has constructed thousands of flood damage reduction and navigation projects throughout the country, involving nearly 12,000 miles of commercially active waterways and nearly 1,000 harbors and including 702 dam and reservoir projects (with 75 hydroelectric plants generating 68 billion kilowatt-hours annually).

The Corps is responsible for maintaining these projects. Additionally, the Corps constructed, usually with nonfederal participation, roughly 9,000 miles of the estimated 100,000 miles of the nation's levees, but the agency operates and maintains only 900 miles. The remaining levees are operated by nonfederal entities, often local governments or special districts.

The Natural Resources Conservation Service in the U.S. Department of Agriculture (USDA) also facilitates water resources development, primarily for flood control in small watersheds and for soil and water conservation purposes. For more information on USDA conservation programs and policies, see CRS Report R40763, *Agricultural Conservation: A Guide to Programs*, by Megan Stubbs.

Many other federal agencies have water-related programs (e.g., EPA, the U.S. Geological Survey, the National Oceanographic and Atmospheric Administration, National Aeronautics and Space Administration, Federal Emergency Management Agency [FEMA], and energy-related agencies such as the Federal Energy Regulatory Commission and Power Marketing Administrations). However, the remainder of this report focuses on the projects, programs, and policies of the Corps and Reclamation.

- For more information on federal water projects and programs—including types of financing and financial assistance—see CRS Report RL30478, *Federally Supported Water Supply and Wastewater Treatment Programs*, coordinated by Claudia Copeland.
- For more information on other federal water activities, see CRS Report R42653, *Selected Federal Water Activities: Agencies, Authorities, and Congressional Committees*, by Betsy A. Cody et al.

U.S. Army Corps of Engineers

During most years, the Corps responds to needs arising from floods and droughts in addition to performing its regular activities related to navigation, flood control, and ecosystem restoration projects and issuing permits for activities that may affect navigable waters and wetlands.[14] Congress generally authorizes Corps water resource activities and makes changes to the agency's policies in an omnibus authorization bill, often titled as a Water Resources Development Act (WRDA). WRDA enactment is usually attempted on a biennial schedule. The most recent omnibus Corps authorization acts were enacted in 2014 (P.L. 113-121) and 2016 (as Title I of WIIN, P.L. 114-322). These bills authorized a discrete set of new studies and construction projects based on Administration reporting and recommendations.[15]

In many cases, Corps facilities and their operations are central to debates over multipurpose river management. For example, Corps reservoir management, such as in the Apalachicola-Chattahoochee-Flint Basin (which provides much of the water supply for Atlanta, GA), often is controversial and has been challenged in the courts. Congress typically appropriates funds for Corps activities in annual Energy and Water Development appropriations acts, and, at times, it uses supplemental appropriations bills to fund Corps emergency activities.[16] Supplemental spending for response and recovery for coastal and riverine floods has raised many questions that Congress may pursue, including those related to national flood risk and federal actions to reduce that risk.

The 115th Congress may follow the tradition of biennial consideration of legislation that authorizes Corps studies and projects and addresses requirements for the Corps water resource activities. Some Corps-related issues that may be discussed in the context of an authorization bill, appropriations bills, or elsewhere include

- efficacy in the use of the Harbor Maintenance Trust Fund for federal maintenance of authorized harbors and associated federal coastal navigation channels;
- investments in projects to deepen coastal harbors;
- Corps policies on pricing for water-supply storage;
- operations manuals for the Corps projects in the Apalachicola-Chattahoochee-Flint Basin, especially related to water supply;
- oversight of Corps efforts to implement public-private partnerships and to develop alternative financing for water resource projects;
- Corps tribal consultation policies and practices;[17]
- policies related to approving easements across Corps-managed lands and approvals for altering Corps projects;[18]
- role of nonstructural measures in flood risk reduction;
- actions to address coastal flood risk, including sea-level rise;[19]
- Corps budgeting and planning priorities;
- recreational policies, including restrictions related to loaded firearms at portions of Corps projects; and
- security of Corps facilities, including cybersecurity.

Bureau of Reclamation

Since the early 1900s, Reclamation has constructed and operated many large, multipurpose water projects, such as Hoover Dam on the Colorado River and Grand Coulee Dam on the Columbia River. Water supplies from these projects have been primarily for irrigation; however, some municipalities also receive water from Reclamation projects. Many of the largest facilities also produce hydropower and provide flood damage reduction benefits. Construction authorizations slowed during the 1970s and 1980s. In 1987, Reclamation announced a new mission recognizing the agency's transition from a water resource development and construction organization to one primarily occupied with managing water resources, including managing water and related resources in an environmentally and economically sound manner.[20] Since then, increased population, prolonged drought, fiscal constraints, and water demands for fish and wildlife, recreation, and scenic enjoyment have resulted in increased pressure to alter the operation of many Reclamation projects. Alterations to operations, project deliveries, and allocations often have been controversial because of potential impacts on water rights, contractual obligations, and local economies.

In contrast to the Corps, there is no tradition of a regularly scheduled authorization vehicle (e.g., a WRDA) for Reclamation projects. Instead, Reclamation projects generally have been considered individually; however, occasionally individual project authorizations are rolled into an omnibus bill.[21] Because project authorizations are typically enacted in stand-alone legislation, project authorizations and Reclamation bills in general have slowed considerably since the 112th Congress and the onset of congressional earmark moratoria.

As with the Corps, Reclamation river and reservoir management in the face of drought and climate change may receive congressional attention. Reclamation facilities and their operation often are central to debates over multipurpose river management, particularly during drought and years of lower-than-normal precipitation and runoff. For example, controversies associated with Reclamation water resource management in the Sacramento and San Joaquin River

watersheds, the Colorado River Basin, and the Klamath River Basin often have been exacerbated by low water flows and also have been the subject of extended litigation—sometimes even in normal water or wet years. Ongoing issues associated with Reclamation's operation of pumps in the San Francisco Bay/San Joaquin and Sacramento Rivers Delta (Bay-Delta) and the pumps' effect on water users and on threatened and endangered species have been particularly controversial during the recent drought in California, which dates to 2012. As discussed above, provisions under Subtitle J of the WIIN Act address some of these controversies.[22]

Examples of Reclamation-related water project and management issues that may be considered during the 115th Congress include the following:

- drought response provisions that were proposed in the 114th Congress but not enacted in the WIIN Act (including provisions that would affect operations of federal reservoirs and water delivery);
- status of new and proposed water storage projects;
- status of Reclamation's Safety of Dams program;
- authorization, appropriations, and reporting to address aging infrastructure;
- Sacramento-San Joaquin Valley water reliability and species concerns (e.g., California WaterFix and proposals to address California water supplies);[23]
- oversight of Colorado River water management;
- authorization of new Indian water rights settlements and appropriations for authorized settlements; and
- oversight of Klamath River Basin issues and efforts.

A broader issue that could receive attention from Congress is oversight of Reclamation's mission and its future role in western water supply and water resource management generally. As public demands and concerns have changed, so has legislation affecting Reclamation. Subtitle J of the WIIN Act authorized federal support for Reclamation projects in a manner that differs significantly from the historic Reclamation project finance model, in which the federal government fully funds project construction costs up front and is repaid over extended terms (typically 40 years to 50 years) by project beneficiaries for the portion of costs allocated to them. The WIIN Act authorized Reclamation to pay up to 50% and 25% of the costs of new federal and nonfederal water resource projects, respectively. If these new authorities are used, they may have significant ramifications, both for the financial requirements associated with new projects and for the types of projects prioritized for federal financial support. The WIIN Act, in a departure from past practices, also gave the Secretary of the Interior authority to construct certain Reclamation projects, subject to a project receiving specific appropriations.

In recent years, Congress has expanded Reclamation's authorities and increased its funding for alternative technologies to increase water supplies in the West. These technologies include water recycling and reuse, aquifer storage and recovery, and desalination, among others. Some stakeholders support expanded authority and funding for these programs as critical to future efforts to address water shortages in the West.

Policy Issues

In addition to issues related to federal projects, the 115th Congress faces a number of broad water resource policy issues, including financing investment in new and aging water resource infrastructure; changing federal partnerships; funding and authorizing projects and earmark policies; restoring aquatic ecosystems; and improving drought and flood preparedness and response.

Financing Investment in Water Resource Infrastructure

U.S. water infrastructure is aging; the majority of the nation's dams, locks, and levees are more than 50 years old.[24] Failure of these structures could have significant effects on local communities as well as regional and national impacts. Major capital investments in these structures have been limited in recent years, and repairing these facilities would cost billions of dollars.[25] Congressional funding largely has been at the project level and has remained essentially flat, while funding needs have increased over time. To date, no comprehensive federal funding solutions have been enacted. Some propose funding mechanisms that might be more conducive to major capital investments in these projects, such as the authorization or modification of loan programs for some infrastructure types or the inclusion of water resource infrastructure among the eligible recipients of funding from an infrastructure bank. Others have proposed using revenues from project beneficiaries (e.g., hydropower revenues, increased user fees) to fund project repairs and upgrades or even de-authorizing and/or transferring projects to nonfederal entities, such as state or local governments. Still others think that Congress requires more uniform information on the extent of this issue before it considers major funding solutions. In the 114th Congress, the Senate held a hearing on this topic and passed legislation that would have required increased reporting by Reclamation on its aging infrastructure backlog (S. 593). (See also discussion below on "Changing Federal Partnerships.") In addition to support for new traditional water infrastructure investments, some argue for expanded authorities and increased funding to augment water supplies through alternative technologies (e.g., water recycling and reuse, aquifer storage and recovery, and desalination) and nonstructural approaches (i.e., flood control projects that use natural features, such as wetlands, natural dunes, or artificial reefs rather than hard coastal defenses, such as seawalls and groins).

Changing Federal Partnerships

Some stakeholders have expressed frustration with the pace of authorization and federal funding of water resource projects, which has resulted in some local sponsors pursuing projects with limited federal partnership or support or with expectations of future federal reimbursement or credit. Language authorizing increased nonfederal contributions to Reclamation project costs (as well as federal contributions to nonfederal projects) was most recently enacted in the WIIN Act. Other Corps authorizing legislation—the Water Resources Reform and Development Act of 2014 (WRRDA 2014; P.L. 113-121)—previously had expanded the ability for nonfederal entities to use their funds to advance Corps projects. Such new partnership models raise the question of whether the federal government has the ability to fund projects at previous levels while maintaining its existing administrative processes and discretion. Other related questions include what the appropriate federal amount of investment and use of these new authorities should be, whether some local sponsors can or should finance their own projects, and whether the nonfederal sponsors with available financing will determine which projects get funded and reimbursed from limited federal water resource infrastructure funds.

Another approach was initiated in the 113th Congress through its authorization of Title X of WRRDA 2014, the Water Infrastructure Finance and Innovation Act (WIFIA). The title authorized a pilot program, to be administered by the Corps and EPA, for loans and loan guarantees for certain flood damage reduction, public water supply, and wastewater projects. WIFIA was modeled after a similar program that assists transportation projects, the Transportation Infrastructure Finance and Innovation Act, or TIFIA, program. To date, the EPA portion of the program has been funded, but the Obama Administration did not request or receive funds to implement the Corps portion of WIFIA. In the 114th Congress, the WIIN Act amended the existing WIFIA authority to expand the EPA program's authorities to address other projects, including those to mitigate the effects of drought. The Corps' WIFIA program was unchanged and remains unfunded.[26]

Funding and Authorizing Projects and Earmark Policies

Water resource project funding is often part of the debate on congressionally directed spending, or earmarks. Although water resource project development historically has been directed by Congress, the site-specific nature of the authorizations and appropriations process resulted in projects being subject to earmark disclosure rules and earmark moratoria beginning in the 112th Congress.[27] Earmark moratoria appear to be altering the makeup of Corps and Reclamation appropriations, particularly by reducing the congressional additions of specific projects to the budget and by Congress funding broad categories of activities rather than specific projects. As a result, some projects that historically have benefitted from congressional support have received less (or zero) funding in recently enacted appropriations bills. In addition to funding impacts, earmark moratoria also have influenced consideration of site-specific authorizations of water resource projects. Some in Congress have proposed exempting Corps and/or Reclamation projects from earmark moratoria, and many have advocated for additional funding for those categories of projects that historically have been reliant on congressional support in this form.

Restoring Aquatic Ecosystems

Congress has authorized restoration activities in the Everglades, Great Lakes, Gulf Coast, and elsewhere. The 115th Congress may consider the status and priority of federal efforts to restore large-scale aquatic ecosystems that have been altered or impaired by development, habitat loss, and federal water resource projects. Other restoration efforts that may receive attention include California Bay-Delta, Chesapeake Bay, Salton Sea, Klamath Basin, and elsewhere. A number of issues pertaining to these ecosystems have emerged. For example, Congress might consider legislation to authorize a framework for governance and a comprehensive restoration plan for the Salton Sea and may conduct oversight over the implementation of restoration activities in the Everglades and Gulf Coast region. Further, Congress might consider policies that could streamline authorizations to allow more projects to be implemented as part of ecosystem restoration initiatives and to allow for greater use of public-private partnerships.

Funding for existing and newly authorized restoration initiatives might generate controversy and could face challenges in the 115th Congress as decisionmakers evaluate investment priorities.[28] Congress might focus on evaluating existing initiatives to determine how efficiently funds are being spent and whether restoration efforts are reaching their objectives. Ecosystem restoration initiatives also might be evaluated for how well they balance demands for water resources and species' conservation needs.

Improving Drought and Flood Preparedness and Response

Congress is often faced with reacting to natural disasters, such as droughts and floods. Local and regional drought conditions, including widespread drought in California since 2012, have left many areas vulnerable to drought-induced impacts, such as water supply and use limitations, reduced agricultural and power production, and degraded fish and wildlife habitat, among other issues. Responsibilities for drought planning and response are split among various levels of government and involve many different federal agencies. Although Congress has enacted legislation to coordinate drought information through the National Integrated Drought Information System, no overarching national drought policy exists.

In light of drought effects on water supply, the 115th Congress may address drought planning and preparedness through oversight hearings or drought policy legislation. For more information on drought impacts and congressional response, see

- CRS In Focus IF10196, *Drought Policy, Response, and Preparedness*, by Nicole T. Carter and Betsy A. Cody;
- CRS Report RS21212, *Agricultural Disaster Assistance*, by Megan Stubbs; and
- CRS Report R42854, *Emergency Assistance for Agricultural Land Rehabilitation*, by Megan Stubbs.

Periodic but intense flooding also garners attention from Congress. Although the Corps is the principal flood-fighting agency, other agencies also play a role in flood response and mitigation, such as FEMA's disaster assistance, flood insurance, and pre-disaster mitigation programs. Additionally, responsibilities for flood damage reduction are spread among federal, state, local, and tribal governments. State and local governments in many ways play a primary role in floodplain management because of their jurisdiction over land-use decisions and local zoning ordinances—deciding where and how development may occur. Given the magnitude of the nation's coastal and riverine flood risk, the 115th Congress may consider additional ways to reduce flood risk.[29] Potential approaches may include improving infrastructure and protecting natural flood mitigation, removing federal disincentives to improved floodplain management, or promoting more pre-disaster recovery plans for highly vulnerable areas.

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Footnotes

1. For more on municipal drinking water infrastructure, see CRS Report RS22037, *Drinking Water State Revolving Fund (DWSRF): Program Overview and Issues*, by Mary Tiemann. For more on municipal wastewater, see CRS Report 98-323, *Wastewater Treatment: Overview and Background*, by Claudia Copeland. For more on wetlands, see CRS Report RL33483, *Wetlands: An Overview of Issues*, by Claudia Copeland and Megan Stubbs, and CRS Report R43455, *EPA and the Army Corps' Rule to Define "Waters of the United States"*, by Claudia Copeland.
2. The Endangered Species Act is found in P.L. 93-205, as amended (16 U.S.C. §§1531, et seq.).

3. The annual appropriations bill for the U.S. Army Corps of Engineers (Corps) and the Bureau of Reclamation (Reclamation) is the Energy and Water Development appropriations bill; however, both agencies occasionally receive funding in emergency or other supplemental appropriations acts, particularly in response to natural disasters, such as floods, droughts, and hurricanes. In the 114th Congress, P.L. 114-254 provided the Corps with $1.026 billion for flood response activities. For more information, see CRS Report R42841, *Army Corps Supplemental Appropriations: Recent History, Trends, and Policy Issues*, by Charles V. Stern and Nicole T. Carter.
4. See below section, "Funding and Authorizing Projects and Earmark Policies."
5. For more information, see CRS In Focus IF10361, *Army Corps of Engineers: FY2017 Appropriations*, by Charles V. Stern, and CRS In Focus IF10375, *Bureau of Reclamation: FY2017 Appropriations*, by Charles V. Stern.
6. For more information on coastal navigation, see CRS In Focus IF10455, *Harbor Deepening: Federal Studies and Construction Projects*, by Nicole T. Carter.
7. See CRS Report R43287, *Columbia River Treaty Review*, by Charles V. Stern.
8. For more on planning guidance, see CRS In Focus IF10221, *Principles, Requirements, and Guidelines (PR&G) for Federal Investments in Water Resources*, by Nicole T. Carter and Betsy A. Cody. For more on standards on federal investments in floodplains, see CRS Insight IN10434, *Federal Flood Risk Management Standard (FFRMS)*, by Nicole T. Carter, Jared T. Brown, and Francis X. McCarthy.
9. CRS Report R43915, *Climate Change Adaptation by Federal Agencies: An Analysis of Plans and Issues for Congress*, coordinated by Jane A. Leggett.
10. CRS In Focus IF10196, *Drought Policy, Response, and Preparedness*, by Nicole T. Carter and Betsy A. Cody.
11. CRS In Focus IF10133, *California Drought: Water Supply and Conveyance Issues*, by Betsy A. Cody.
12. Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming.
13. U.S. Department of the Interior, *Budget Justifications and Performance Information Fiscal Year 2017*, Bureau of Reclamation, 2016, p. General Statement-2, at http://www.usbr.gov/budget/.
14. A discussion of the Corps regulatory programs is beyond the scope of this report. The most notable of the Corps' regulatory activities is associated with wetland protection. For more on wetlands issues, see CRS Report RL33483, *Wetlands: An Overview of Issues*, by Claudia Copeland and Megan Stubbs.
15. For more information, see CRS Report R41243, *Army Corps of Engineers: Water Resource Authorizations, Appropriations, and Activities*, by Nicole T. Carter and Charles V. Stern.
16. For more on these topics, see CRS Report R42841, *Army Corps Supplemental Appropriations: Recent History, Trends, and Policy Issues*, by Charles V. Stern and Nicole T. Carter.
17. See CRS Insight IN10608, *Army Corps Projects and Tribal Consultation: Requirements, Policies, and Controversy*, by Nicole T. Carter.
18. The Dakota Access Pipeline has brought attention to Corps easements and approvals to alter Corps projects. For more on Dakota Access Pipeline, see CRS Insight IN10567, *Dakota Access Pipeline: Siting Controversy*, by Paul W. Parfomak.
19. See CRS Report R44632, *Sea-Level Rise and U.S. Coasts: Science and Policy Considerations*, by Peter Folger and Nicole T. Carter.
20. Reclamation's current mission statement can be found at http://www.usbr.gov/main/about/mission.html.
21. Congress also occasionally passes omnibus bills addressing key Reclamation policy changes, as well as new or revised project and program authorizations. Prior to passage of the Water Infrastructure

Improvements for the Nation Act (WIIN Act; P.L. 114-322) in 2016, the last omnibus bill including multiple Reclamation subtitles was P.L. 111-11 in 2009, which also included federal land subtitles. The last time Congress enacted a stand-alone omnibus Reclamation authorization bill was in 1992, the Reclamation Projects Authorization and Adjustment Act (P.L. 102-575).

22. See previous section, "Legislation Enacted in the 114th Congress."
23. The California WaterFix is a state and nonfederal proposal to build two large tunnels under the California Bay-Delta to transport water from the Sacramento River to existing pumps south of the estuary. According to proponents, the objectives of WaterFix are (1) to allow for a more natural pattern of flows (i.e., hydrograph) of water in the Delta to support salmon, smelt, and other species; (2) to increase water supply reliability and flexibility to manage water flows; and (3) to protect the water conveyance system from the effects of natural hazards, such as flooding and earthquakes. The expected cost of the project is over $17 billion, primarily paid by water districts and the state of California (California WaterFix, *Fixing California's Water System: Securing State Water Supplies*, https://www.californiawaterfix.com/). While the proposal would have water flows in the Delta resemble a more natural hydrograph, potentially significant volumes of natural flows would be diverted around the Delta by the tunnels.
24. The majority of the Bureau of Reclamation's facilities are more than 50 years old, and Corps infrastructure averages more than 55 years old. See CRS Report RL34466, *The Bureau of Reclamation's Aging Infrastructure*, by Charles V. Stern.
25. For example, for the Corps alone, waterway users previously estimated that needed lock repairs and upgrades total $8 billion-$18 billion over the next 20 years, and the Corps has stated that it will require more than $26 billion for dam safety repairs over the next 25 years. According to the Department of the Interior, needed repairs to Reclamation facilities totaled $3.2 billion in 2008.
26. For more information, see CRS Report R43315, *Water Infrastructure Financing: The Water Infrastructure Finance and Innovation Act (WIFIA) Program*, by Claudia Copeland.
27. Since the 112th Congress, the House Republican Conference, Senate Republican Conference, and Senate Appropriations Committee all have adopted moratoria on earmark requests that have been significant to how Congress identifies specific activities to authorize and fund.
28. WIIN authorized or amended the authorizations for federal restoration efforts in the Great Lakes, Lake Tahoe, Everglades, and other federal restoration activities.
29. A 2013 study concluded that the typical 100-year riverine and coastal flood hazard areas are expected to grow nationally by 40% to 45% by 2100 (AECOM, *The Impact of Climate Change and Population Growth on the National Flood Insurance Program Through 2100*, Federal Insurance and Mitigation Administration, Federal Emergency Management Agency, June 2013). For more on the National Flood Insurance Program (NFIP) and its financial management and related issues, see CRS Report R44593, *Introduction to FEMA's National Flood Insurance Program (NFIP)*, by Diane P. Horn and Jared T. Brown.

MEMORANDUM February 20, 2018

To: Senate Committee on Environment and Public Works
Attention: Chairman John Barrasso and Ranking Member Thomas R. Carper

From: Nicole T. Carter, Specialist in Natural Resources Policy, ncarter@crs.loc.gov, 7-0854

Subject: **Questions for the Record for January 10, 2018, Hearing, "Water Infrastructure Needs and Challenges"**

This memorandum responds to the questions for the record posed to the Congressional Research Service (CRS) witness at the Senate Environment and Public Works Committee hearing on "Water Infrastructure Needs and Challenges" held on January 10, 2018.

Response to Levee Safety Question

Chairman Barrasso submitted the following question for the record: *Since 2007 each WRDA bill has addressed levee safety issues. Can you describe the status of the implementation of these provisions?*

In the Water Resources Development Act of 2007 (WRDA 2007; P.L. 110-114) and subsequent legislation, Congress has enacted authorizations that direct the U.S. Army Corps of Engineers (USACE) to establish a National Levee Database (NLD) and to inventory and review certain levees for safety risks. Congress also authorized a National Levee Safety Initiative (NLSI) in the Water Resources Reform and Development Act of 2014 (WRRDA 2014; P.L. 113-121), and amended the NLSI authorization in the Water Resources Development Act of 2016 (WRDA 2016; Title I of P.L. 114-322). The response below addresses the authorities and status of the NLD and the inventory and review efforts; it also discusses the authority and status of the NLSI.

Database, Inventory and Review

In 2005, when the impacts of Hurricane Katrina focused public attention on levee and floodwall safety, no federal effort was in place to promote levee safety that was similar to the National Inventory of Dams or the National Dam Safety Program.[1] In Section 9004 of the WRDA 2007, Congress charged USACE with developing a National Levee Database (NLD, 33 U.S.C. §3303(a)) and conducting an inventory of federally owned and operated levees (33 U.S.C. §3303(b)). USACE established the NLD and made it available to the public in October 2011. The NLD currently includes data that covers roughly 29,000 miles of levees. This includes data from approximately 14,000 miles of levees that are either owned and operated by USACE or are nonfederal levees that participate in the USACE Rehabilitation and Inspection

[1] For more information on dam safety efforts, see CRS In Focus IF10606, *Dam Safety: Federal Programs and Authorities*, by Charles V. Stern et al.

Program (RIP);[2] the other data are voluntarily provided for roughly 15,000 miles of nonfederal levees that do not participate in RIP. The levees in the NLD represent a subset of the nation's levees; the nation may have as many as 100,000 miles of levees, including agricultural levees.

Section 3106 of WRRDA 2014 provided the USACE additional direction and authority; it directed USACE to perform a one-time inventory and review of levees in the NLD (33 U.S.C §3303(c)). As performed by the USACE, the review amounts to a risk-screening of the levees (i.e., an assessment of the relative risk associated with a levee in terms of its condition and consequences associated with its performance). USACE has been working toward completing the WRRDA 2014-authorized inventory and review. For the nonfederal-operated levees in the NLD, USACE first focused the inventory and review on the levees that participate in RIP. Efforts are underway in FY2018 to begin review of the roughly 15,000 miles of nonfederal levees in the NLD that do not participate in RIP. The current status of the NLD inventory and review effort is not publicly available.[3]

National Levee Safety Initiative

Although 49 states have state dam safety programs, the majority of states do not operate levee safety programs. The 113th Congress first authorized a National Levee Safety Initiative in Section 3016 of WRRDA 2014 (33 U.S.C. §3303a); the 114th Congress made amendments to this authorization in Section 1130 of WRDA 2016. Through the NLSI, Congress authorized federal actions to support establishment or improvement of state and tribal levee safety programs. Most activities authorized pursuant to the NLSI have remained unfunded in subsequent appropriations cycles and have not been implemented. The information produced from the USACE inventory and risk screening of nonfederal levees may facilitate subsequent efforts to establish and improve state levee safety programs.

Response to Deauthorization Question

Chairman Barrasso submitted the following question for the record: *In addition to the one-time deauthorization mechanisms in the Water Resources Development Act bills in 2014 and 2016, Congress has previously provided the Corps with other deauthorization authorities to clean the books of projects that are no longer priorities. Can you describe these deauthorization authorities?*

Congress established the basic framework for the current process for deauthorizing unconstructed projects or project elements in the Water Resources Development Act of 1986 (P.L. 99-662).[4] Under the current deauthorization process, the Secretary of the Army is directed to annually transmit to Congress a list of authorized projects and project elements that did not receive funding obligations for the planning, design, or construction of a project or project element during the last five full fiscal years. If funds are not obligated to a project or project element on the list during the following fiscal year, the project or project element is automatically deauthorized. Notice of the deauthorization is required to be published in the *Federal Register*. For a number of years, the Secretary did not transmit project lists to Congress, and no deauthorizations occurred pursuant to this authority. The *Federal Register* for August 10, 2016, included two notices of deauthorizations pursuant to this authority that contained a combined total of 57 projects and project elements.[5] No subsequent lists deauthorizing projects under this authority have been published

[2] The NLD does not currently include many levees and other structures that function similar to levees (e.g., certain water transport and irrigation canals) that are owned by federal agencies other than USACE.

[3] The detailed USACE budget justification documents describing the specific activities planned for USACE in FY2019 were not released with the proposed budget on February 12, 2018; these documents may provide further detail on the Administration's plans for the future direction of USACE levee safety activities.

[4] The authorization for the current process, including amendments subsequent to 1986, is codified at 33 U.S.C. §579a(b)(2)).

[5] The two Federal Register notices can be found at https://www.federalregister.gov/documents/2016/08/10/2016-

(continued...)

in the *Federal Register*. Section 1175 of WRDA 2016 made certain projects authorized to receive funds from the Inland Waterways Trust Fund exempt from this deauthorization process.

There also are deauthorization processes for projects authorized in specific bills, such as WRRDA 2014 and WRDA 2016. Section 6003 of WRRDA 2014 (33 U.S.C. §579c) requires that any project authorized in WRRDA 2014 be automatically deauthorized after seven years of enactment if no funding has been obligated for construction. Section 1302 of WRDA 2016 (33 U.S.C. §579d) requires that any project authorized in WRDA 2016 be automatically deauthorized after ten years of enactment if no funding has been obligated for its construction, unless certain conditions apply. These bill-specific deauthorization processes and the previously discussed general process all exist in statute; uncertainties regarding how implementation of these authorities are to be coordinated has not been addressed by the agency.[6]

The deauthorization processes just described are for unconstructed projects or project elements of congressionally authorized USACE construction activities; a separate divestiture process is used for disposing of constructed projects or project elements and other real property interests associated with civil works projects. Some divestitures also may require explicit congressional deauthorization. USACE divestitures historically either have been limited to projects or real property interests that are no longer serving their authorized purposes (e.g., navigation channels that no longer have commercial navigation) or have been conducted pursuant to specific congressional direction.

There is currently no formal authorized process for a nonfederal project sponsor to propose a project for deauthorization. Some nonfederal project sponsors have proposed deauthorizations through the annual report process established by Section 7001 of WRRDA 2014. The Administration has stated in its Section 7001 annual reports to Congress that the submitted deauthorization proposals do not qualify pursuant to the congressional direction in Section 7001(c)(1)(A) of WRRDA 2014 (33 U.S.C. §2282d(c)(1)(A)). Congress has deauthorized projects and project elements in legislation including in Section 6004 of WRDA 2014 and Subtitle C of WRDA 2016.

Response to Question Regarding Next WRDA

Ranking Member Carper submitted the following question for the record: *Given our current operating environment with recently passed tax reform, the state of our crumbling infrastructure (with a grade of "D" — for deplorable!), limited number of Chief's reports and a large backlog of Corps projects, what are the big issues that we should be tackle in this next Water Resources Development Act?*

The Congressional Research Service does not take positions on legislation or make recommendations. CRS can provide information on the context shaping policy deliberations.

Among the various contextual elements pertinent to USACE-related deliberations are the following:

- disaster supplemental appropriations legislation;
- nonfederal entities performing water resource activities; and

(...continued)

19020/deauthorization-of-water-resources-projects, and https://www.federalregister.gov/documents/2016/08/10/2016-19024/deauthorization-of-water-resources-projects.

[6] USACE indicated in its implementation guidance for Section 6003 that "Additional guidance will be provided" (U.S. Army Corps of Engineers, *Implementation Guidance for Sections 6001 and 6003 of the Water Resources Reform and Development Act of 2014—Deauthorization of Inactive Projects and Backlog Prevention*, Memorandum for Distribution, February 23, 2015, p. 6, http://cdm16021.contentdm.oclc.org/utils/getfile/collection/p16021coll5/id/350). At a USACE website dedicated to WRDA 2016 implementation guidance (http://cdm16021.contentdm.oclc.org/utils/getfile/collection/p16021coll5/id/738), USACE indicated that implementation guidance was not necessary for Section 1302 of WRDA 2016.

- benefit cost analyses (BCAs).

These three contextual elements are discussed below.

Disaster Supplemental Appropriations Legislation

The Bipartisan Budget Act of 2018 (P.L. 115-123) provided more than $15 billion in emergency supplemental appropriations for the construction of USACE-related flood-risk reduction projects. Like P.L. 113-2, which provided emergency supplemental appropriations following Hurricane Sandy, P.L. 115-123 allows for a USACE project to transition from being studied to being constructed without project-specific congressional authorization if certain conditions are met. That is, a project-specific congressional construction authorization is not required for USACE projects constructed with the funding provided in P.L. 115-123. The bill allows for its USACE construction funds to be used on USACE flood-risk reduction projects that do not have a project-specific congressional authorization "if the Secretary [of the Army] determines such projects to be technically feasible, economically justified, and environmentally acceptable, in States and insular areas with more than one flood-related major disaster declared pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.) in calendar years 2014, 2015, 2016, or 2017." As discussed in CRS Report R42841, *Army Corps Supplemental Appropriations: History, Trends, and Policy Issues*, annual discretionary appropriations for USACE flood-risk reduction construction typically have been less than $1 billion in recent years; therefore, the secretarial determination provided for by P.L. 115-123 may provide the approval framework for a significant portion of the agency's flood-risk reduction construction for the next few fiscal years. An issue for Congress is how well does the existing suite of general statutory authorities and requirements for USACE flood-risk reduction projects guide project development and construction in the absence of project-specific authorization by Congress.

Nonfederal Entities Performing Water Resource Activities

In WRRDA 2014 and WRDA 2016, Congress expanded various authorities that allow nonfederal entities, including private interests, to fund, perform, and lead USACE project development and construction. Congress did not alter the cost-sharing arrangements between the federal government and the nonfederal project sponsor for activities pursued by nonfederal entities. Cost sharing differs depending on the purpose of the project; for example, the costs of construction of most riverine flood-risk reduction projects are shared 65% federal and 35% nonfederal. Under most of these authorities, nonfederal entities advancing water resource projects may be eligible to receive reimbursement (without interest) subject to the availability of federal appropriations for their investments that exceed the required nonfederal share of project costs. Under these authorities, additional nonfederal public and private investments may, in the near term, achieve progress on some water resource projects, thereby potentially making federal funding available for other authorized USACE projects. However, additional nonfederal investment may have potential tradeoffs for the federal government, including reduced federal influence over the set of studies and construction projects receiving, expecting, and eligible for federal support. An issue for Congress is whether the existing authorities allowing nonfederal leadership and performance of work on USACE water resource projects are providing net benefits for the nation in both the short-term and the long-term.

The Government Accountability Office (GAO), in a December 2016 report titled *Better Guidance Could Improve Corps' Information on Water Resources Projects Undertaken by Nonfederal Sponsors*, found that the number of federal water resources studies and projects that nonfederal sponsors have undertaken, and the amounts they have been reimbursed, could not be reliably determined.[7] According to GAO, USACE

[7] GAO, *Better Guidance Could Improve Corps' Information on Water Resources Projects Undertaken by Nonfederal Sponsors*, December 2016, p. 26, at https://www.gao.gov/assets/690/681415.pdf.

headquarters does not centrally track this information, and the information that headquarters provided to GAO did not match the information that GAO collected from USACE districts. The information that GAO collected indicated that nonfederal sponsors have led or are leading USACE-related studies and projects with total estimated costs of approximately $4 billion and that the federal government had reimbursed $400 million to cover some of the federal costs related to these projects.[8] GAO did not report what would be the total remaining potential reimbursement amount to cover the federal cost share associated with these studies and projects.

Benefit-Cost Analyses

Since 1936, Congress has relied on benefit and cost information to justify investments of federal involvement in USACE water resource projects. Today, Congress faces more demand for water resource projects than the agency can deliver with the funding provided through annual discretionary funding for the agency. Benefit-cost analyses (BCAs) of USACE water resource projects have had a long and central role in the executive branch's recommendations to Congress on construction authorization. Disagreement persists about various aspects of these analyses, including the use of BCAs in decisionmaking, how (and which) benefits and costs are captured and monetized, and how to value future benefits and costs. The quality and reliability of BCAs shape federal decisionmaking and the efficacy of federal and nonfederal spending on federal water resource projects. Executive branch budget-development guidance for USACE over the last decade has used a benefit-cost ratio (BCR) threshold (e.g., the benefits of the project are required to be more than 2.5 times the project costs, i.e., BCR>2.5), as one of the primary performance metrics for selecting which construction projects to propose for funding; in contrast, the threshold for authorization is typically that the benefits exceed the costs (i.e., BCR>1). An issue for Congress and nonfederal project sponsors is the uncertain prospects for construction for the suite of congressionally authorized projects that do not meet the budget-development BCR threshold.

[8] Ibid, pp. 17-18.

Senator BARRASSO. Thank you very much, Ms. Carter. We appreciate your testimony. There may be some questions in a little bit.

I would like to now welcome Mr. Steven Cochran, the Associate Vice President for Coastal Protection, Restore the Mississippi Delta Coalition.

Thanks so much for joining us today.

STATEMENT OF STEVE COCHRAN, ASSOCIATE VICE PRESIDENT FOR COASTAL PROTECTION, ENVIRONMENTAL DEFENSE FUND, AND DIRECTOR, RESTORE THE MISSISSIPPI DELTA COALITION

Mr. COCHRAN. Thank you, Senator Barrasso, Senator Carper, and members of the Committee. I also want to thank Senator Cassidy for coming here this morning. I don't know if you noticed it, but he has a bad cold, so I particularly appreciate him being willing to come out here today.

I want to thank Senator Kennedy from our State as well, both of them do diligent work on behalf of our State's vulnerable coastal communities.

For the record I am Steve Cochran, Associate Vice President with the Environmental Defense Fund, and the director of a coalition called Restore the Mississippi River Delta. We are a coalition of three national organizations—the Environmental Defense Fund, the National Audubon Society, and the National Wildlife Federation—and two Louisiana based organizations, the Coalition to Restore Coastal Louisiana and the Lake Pontchartrain Basin Foundation.

For over 10 years our coalition has worked together on landscape scale restoration across the Louisiana coast. In addition to my own written statement, which is submitted for the record, Coalition members National Wildlife Federation and Audubon have also submitted written testimony. I hope the Committee can give them due consideration as well.

This morning I would like to tell you a little about the challenges in my home State of Louisiana, where, to be blunt, as Senator Cassidy said, we have a coastal crisis. As Congress begins to look at WRDA, I want to focus on possible solutions from what we believe are lessons from the front.

The Louisiana coast, since the 1930s, has lost about 1,900 square miles. As Senator Carper knows, that loss is roughly the size of the State of Delaware. Without action, we are projected to lose up to another 4,000 square miles within the next 50 years.

These losses have dramatic implications for millions of people and their communities along the coast; for nationally significant energy and refining infrastructure, for globally significant port facilities, and for world class habitat that supports countless wildlife species, including a huge diversity of commercial and recreational fisheries.

While the crisis along Louisiana's coast is unique, its challenges are reflected across the country. As the Committee knows, 2017—Senator Carper pointed this out earlier—set the record for weather related damages across the country, the majority of which were from hurricanes and floods. As you would imagine, we spend a lot of time in the Delta thinking about solutions. From that perspec-

tive, here are some general concepts that we would recommend as you consider WRDA.

First, coastlines are complex systems, and each area requires its own carefully considered measures to adapt to changing conditions.

Second, no engineered or natural structure is 100 percent effective against all storms, but structural solutions can be rendered far more effective in concert with restored natural features and processes.

Third, in many cases our nation's wetlands and floodplains are themselves critical infrastructure that needs to be restored so that, in addition to their ecological benefits, they can be used specifically to reduce the impacts and costs of floods and storms.

In Louisiana, the State and its partners have used these concepts in constructing their own approach. Louisiana's Master Plan for a Sustainable Coast is a document which guides comprehensive State planning initiative based on cutting edge science and modeling. It is driven by priorities, recognizes finite funding, and enjoys quite remarkable bipartisan support. This Plan is iterative, which means it is updated every 5 years to incorporate the latest science and reflect progress. Each update must be approved by the State legislature, and each of its three iterations over 15 years have all been unanimously approved.

This plan is also informed by an exceptional and growing public engagement process, giving communities a voice in their own future. We strongly recommend that other States facing significant flooding challenges examine the Master Plan's approach as a useful guide.

As for details, gray projects like rocked shorelines or levees are complemented with restored wetlands, barrier islands, and oyster reefs, as well as non-structural approaches. A combination of these measures are organized to create a "multiple lines of defense." As you can see, my colleague Shannon is holding here, you see the array of various approaches that can be married together, both structural and natural, to really provide multiple lines of defense. That is true along rivers; it is true along coastlines. It is this kind of thinking that we would strongly recommend to the Committee in thinking about the kinds of projects that it encourages and supports, incentives that it builds into the system going forward.

This next chart is just simply a specific version, done specific to Louisiana, where you can actually see how it works in our setting. These charts are in the written testimony, and you can look at them in more detail that way.

Now, the natural aspects of these are really beneficial, because they have so many co-benefits. Oyster reefs, which help reduce wave problems, also grow oysters. Storm surges that can be stopped by wetlands, wild wetlands maintain significant habitat. The maritime, swamp and mangrove forests can lower wind speeds from storms, while also supporting vast numbers of wildlife and commercial species. So it is these things together that we think really make the most sense, particularly as we have limited assets and finite resources going forward.

One final element I want to tell you about that Senator Cassidy mentioned is the Mid-Barataria Sediment Diversion. It is a unique and innovative approach. This was originally authorized—I will

make this point—in WRDA 2007 under a different name. It will take up to 75,000 cubic feet of fresh water and sediment from the Mississippi River, and at strategic times in the river's cycle, deliver it to the threatened wetlands on the western side of the river. In doing so, it will use the power of nature to build and sustain tens of thousands of wetland acres, including those created through separate projects. These wetlands will in turn provide buffering for the levees, inside of which are our communities and the industry that we depend upon. So you get the mix of natural infrastructure, protecting built infrastructure, protecting our communities and coasts. It is that combination that we think makes the most sense.

It is a wonderful approach for us, but I have to add here that these kinds of projects are not without challenges. In this case, because of the project's essential nature for our work, the State has decided to fund it entirely on its through resources that came through the Deepwater Horizon penalties. Those of course are subject to Federal agency permitting, as they should be. I want to underscore the importance from our perspective of environmental review, and frankly, even our opposition to some of the forms of streamlining that we have seen.

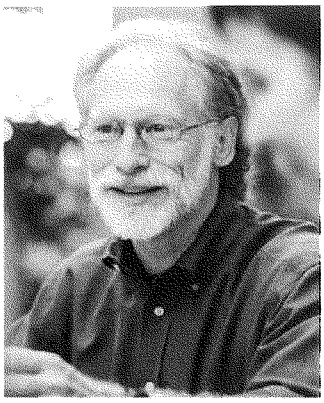
However, the Federal permitting timeline of nearly 5 years for this urgent, already long studied project is unacceptable, given the urgency that we face. In this case, some delays stem from several factors, including the challenges some agencies confront in accounting for what happens if no action is taken at all.

Given the urgency of the crisis in Louisiana and the challenges associated with it, it may be that a targeted legislative solution is required, which if done carefully and without damage to the underlying statute, we support. Here and elsewhere, we are encouraging permitting agencies, including the Corps and NOAA, to work cooperatively and expeditiously to find ways to consolidate the permitting timelines.

In summary, Louisiana is deploying multiple lines of defense and pursuing innovation to address a coast in crisis. But to be successful, it needs a reliable, effective Federal partner that can provide timely and appropriate resources, and stay focused on solutions. As the Committee moves forward with this authorization, we encourage you to think about that formula for the rest of the country as well.

I went a little long. Thank you for your patience.

[The prepared statement of Mr. Cochran follows:]



Steve Cochran
Director
Restore the Mississippi River Delta Coalition

The Coalition's mission is reconnecting the River with its Delta – to protect people, wildlife and jobs. Its primary partners are the National Wildlife Federation, National Audubon Society, Environmental Defense Fund, Coalition to Restore Coastal Louisiana, and Lake Pontchartrain Basin Foundation. Steve began leading the Coalition in 2013.

He also serves as Associate Vice President, Coastal Protection at the Environmental Defense Fund, where he has worked for more than 20 years, and has the overall responsibility for EDF's coastal protection efforts.

After growing up in Louisiana, Steve joined EDF in Washington DC in1997. While there he served in a number of roles, including:

- Legislative Director
- Director of Strategic Communications
- Director of the National Climate Campaign;
- Vice President, Climate and Air; and
- Executive Vice President and Political Director of EDF's 501 c(4) organization

Prior to joining EDF, Steve served in government and NGO roles at the state and federal levels, including:

- Senior Policy Analyst for the Office of Air and Radiation at the U.S. EPA (1992-1997);
- First Executive Director at the Lake Pontchartrain Basin Foundation (1990-1992);
- Chief of Staff for Governor Buddy Roemer of Louisiana (1988-1990);
- District Representative for U.S Congressman Roemer (1987-1988)
- Legislative Director for U.S. Congressman Roemer (1984-1987).

Steve received his B.S. from Louisiana State University in 1976. He began his career in the private sector in Louisiana, spending five years negotiating oil and gas leases for an independent energy exploration firm. He makes his home in New Orleans, Louisiana.

Statement of Steve Cochran
Director, Restore the Mississippi River Delta
Regarding America's Water Infrastructure Needs and Challenges
Before the Committee on Environment and Public Works
United States Senate

January 10, 2018

Thank you Mr. Chairman, Ranking Member Carper and members of the Committee for inviting us to be here today. I also want to thank Senators Cassidy and Kennedy for their diligent work on behalf of our state's vulnerable communities and the protection strategies and natural resources on which they rely.

I am Steve Cochran, Assoc. Vice President with Environmental Defense Fund, and the Director of a coalition called Restore the Mississippi River Delta. We are a coalition of 3 national organizations (EDF, the National Audubon Society, and the National Wildlife Federation) and 2 Louisiana based organizations (Coalition to Restore Coastal Louisiana and the Lake Pontchartrain Basin Foundation). For over 10 years, our coalition has worked together on landscape scale restoration across the Louisiana coast. In addition to my own statement, Coalition members NWF and Audubon have also submitted written testimony, to which I hope the Committee will give its full consideration.

Through our work in coastal Louisiana, and through our national organizations' experiences in coastal areas around the country, we have gained knowledge and experience around coastal restoration and protection, and particularly around the synergies between natural infrastructure and built infrastructure that, when properly paired, can work for optimal delivery of the Corps' multiple missions of navigation, flood control, and restoration. We are committed to helping communities find, fund, and implement means to shape their futures as they work to avoid being at the mercy of the next storm or flood. And we urge the Committee to enhance investments in our critical natural infrastructure as a better-integrated strategic component in that effort.

This morning I will tell you a little about the challenges in my home state of Louisiana, give you a few numbers about the risks and challenges in other parts of the country, and focus on possible solutions.

The Louisiana Experience, and Beyond

As the Committee is well aware, the Louisiana Coast is in the midst of a land loss crisis with dramatic implications for our economy, our natural environment, our culture, and our people. Since the 1930s, we have lost about 1,900 square miles of land to the Gulf. Recent catastrophes, such as Hurricanes Katrina and Rita, and the Deepwater Horizon oil disaster, exacerbated the coastal crisis. Without action, we are projected to lose up to another 4,000 sq. miles within the next 50 years.

These statistics underlie a serious challenge for our communities and for the nation's economy. Currently these threatened coastal lands and wetlands provide protection and support for:

- close to 2 million people;

- nationally significant oil and gas production and transportation, and petroleum and chemical refining;
- globally significant port facilities, as the five south Louisiana ports along the Mississippi River are together the largest port complex in the nation; and
- World-class habitat for countless wildlife species, including a huge diversity of commercial and recreational species.

While the crisis on the Louisiana Coast and the Mississippi River Delta – one of the world's most important and vulnerable estuaries – is unique, its challenges are mirrored all across the Southeastern US and the rest of the country, where flood and storm damage and the costs of these disasters are escalating at an alarming rate. America's coastal areas are responsible for 42 percent of national economic output, according to the National Oceanic and Atmospheric Administration[1]. They contribute 51 million jobs and $2.8 trillion in wages[2]. They are home to some 40 million of our fellow Americans. And without significant upgrades in coastal resiliency, those coastal residents, communities, environments, and economic assets are at substantial, intolerable risk.

In fact, Moody's[3] reported in November that in the Northeastern US alone, the current projected economic effects of forecast storm surges are significant, with average annual property losses projected to increase by between $6 billion and $11 billion by 2100. Given the devastation and costs associated with the recent storms with which Congress continues to grapple, it would surprise no one if these projections are understated. And in the Gulf Coast Region – where 72 percent of ports, 27 percent of major roads, and 9 percent of rail lines exist less than 4 feet above sea level – the level of exposure poses constant dangers to lives and livelihoods.[4]

Solutions for a changing future

So what is the solutions set for these challenges? Our experience in Louisiana provides us with some key perspectives on sustaining coastal environments and communities:

- Coastlines are complex systems, and each area requires carefully considered measures to adapt to changing conditions.
- No engineered structure is 100% effective against all storms – but structural solutions can be rendered far more effective in concert with restored natural features and processes.
- Our nation's wetlands and floodplains are themselves critical infrastructure that need to be restored to reduce the impact and costs of floods and storms.

In Louisiana, rather than pitting "grey" vs "green", we have by necessity pursued the integration and utilization of these infrastructure types for maximum, sustainable benefits and protections for communities. Central to this approach is "Louisiana's Master Plan for a Sustainable Coast," a comprehensive state planning initiative that is based on cutting edge science and modeling; is driven by priorities, recognizing finite funding; and enjoys powerful bipartisan support within the state of Louisiana itself, where the issue of coastal restoration is existential in nature. It is an iterative plan

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[1] Kidlow, J.T., Colgan, C.S., & Scorse, J. (2009). State of the U.S. ocean and coastal economies. National Ocean Economic Program, Nevada City, CA.

[2] NOAA, 2001, State of the Coast Report

[3] Moody's Investor Service, "Evaluating the impact of climate change on US state and local issuers" November 27, 2017

[4] Globalchange.gov

that requires updating every five years so that the latest science is continually incorporated. Each update must be passed through the legislature – and each of its three iterations have been unanimously approved — and its annual funding plan must also pass the legislature, which it has always done. As important, it is informed by an exceptional public engagement process, which gives communities a voice in its development. We strongly recommend that other areas facing significant flooding challenges examine the Coastal Master Plan's approach as a useful guide.

In the Louisiana Coastal Master Plan, grey projects like rocked shorelines or levees are combined with restored wetlands, barrier islands, and oyster reefs, as well as non-structural approaches like elevated buildings. These different measures are often organized to create a "multiple lines of defense" approach to protection and sustainability. The broad, consistent bipartisan support for the plan is easy to understand: this all-of-the-above approach – restoring critical natural ecosystem functions while addressing structural needs and community resiliency measures – provides the best chance to minimize losses and to maintain the vibrancy and security of the Louisiana Coast.

The graphic included as Attachment A to this statement demonstrates how the State's plan seeks to integrate these natural and structural components. It is important to note that many natural defenses like the ones illustrated in that image offer significant co-benefits. Healthy shell fish beds can reduce wave heights, while wetlands can absorb flood waters and storm surges (Cunniff 2016[5]). Maritime and mangrove forests can lower wind speeds. Meanwhile all these features can enhance the integrity of engineered features and extend the useful life of traditional infrastructure, protecting ports and other coastal assets. In addition, these features double as wildlife habitat and recreational areas, supporting the outdoor and natural resource economies. Our local groups, Lake Pontchartrain Basin Foundation and Coalition to Restore Coastal Louisiana, have done great work in analyzing and communicating about these kinds of approaches.

We were pleased to see a similar integrated framework in the Corps of Engineers North Atlantic Coast Comprehensive Study, post Sandy. As the graphic included here as Attachment B shows, a conceptual integration of natural and man-made defenses provide better protection, and more resilient and sustainable defenses over time. It also includes other measures to reduce the impacts of floods if they do occur, and ensure human safety. These elements range from "speed bumps" for storm surge (breakwaters, oyster and coral reefs, barrier islands and dunes), to supported and protective habitat (vegetated dunes, wetlands, maritime forests), to more built protections, (living shorelines, levees, seawalls) to the range of inshore-based efforts (retention ponds, elevated buildings, evacuation plans, and even relocation and resettlement).

One key component in the integrated strategy for coastal Louisiana is a series of sediment diversions that are the absolute key to sustainable restoration along the Louisiana coast. These control structures will be built into the Mississippi River levee and used to capture and divert the natural land building abilities of the Mississippi River, to recreate a managed flow of fresh water and sediment to rebuild and sustain functioning wetland habitat that is currently being lost at an alarming rate. These restored wetlands in turn help to protect coastal infrastructure and assets, including the Mississippi River levees themselves, ports, and coastal communities. Large scale sediment diversions will be used in strategic places along the Mississippi River, starting with the

[5] S.E. Cunniff 2016. "The time to start is now: How implementing natural infrastructure solutions can improve and protect our coasts." Shore & Beach, Vol. 84, No. 1, Page 29.

Mid-Barataria Sediment Diversion south of New Orleans. See Attachment C for a visual depiction of the project structure.

The Mid-Barataria Sediment Diversion, originally authorized in WRDA 2007 under a different name, will take fresh water and sediment from the Mississippi River and, at strategic times in the river's cycle, deliver it into threatened wetlands on the western side of the river. In doing so, this project will build new wetlands and sustain existing wetlands, including those created through dredge and fill projects. Its location, and area of influence is shown in Attachment D.

This innovative approach to natural resource restoration, wetland enhancement, and community protection is the kind of thinking, adapted to the particular needs of different areas, that we would encourage – synergistic, function and outcome-oriented, and efficient -- particularly as needs are more and more pressing, and resources stretched thin.

Given the project's surpassing importance and the availability of state funding to construct it through the Deepwater Horizon settlement, the State has assumed responsibility for building the Mid-Barataria Sediment Diversion - subject to federal agency permitting. The project is currently listed on the Federal Permitting Dashboard, a platform established under the Fixing America's Surface Transportation Act (FAST-41). That platform is intended to increase transparency and provide important mechanisms to improve coordination between agencies involved in the permitting process. Nonetheless, our organizations view the posted timeline for project permitting – nearly 5 years – as unacceptable given the urgency of the land loss crisis, and the length of time that these projects have been studied. We will be encouraging permitting agencies including the Corps to work cooperatively and expeditiously to find ways to consolidate the permitting timeline for this critical project, and will be happy to keep the Committee apprised of its progress.

Other recommendations

When considering broader approaches to improve the relevancy, effectiveness and efficiency of the Corps of Engineers, our organizations submit the following thoughts and suggestions. We also include additional ideas from some of the coalition's component members, as an appendix to this testimony.

Our comments reflect 3 related themes: systems thinking, modernization, and funding.

Systems Thinking: In building resilience to extreme weather and other effects of climate change, we can no longer afford to separately address related issues such as flood risk reduction, groundwater recharge, water quality, and habitat restoration. To realize more effective solutions, the Corps should undertake more regional approaches that reflect systems thinking. Currently siloed efforts to address flood control, navigation, and environmental restoration are out of step with the complexity and integrated nature of river and coastal systems, and the need for solutions that address multiple challenges at once.

Modernization: Congress should also require the Corps to evaluate and update operations plans and water control manuals for large-scale Corps projects at least every 10 years, and implement needed operational changes as appropriate. Many major Corps projects are being operated under antiquated, decades-old manuals and plans. Outdated plans often fail to account for system changes, resulting in projects that are not optimized to do the work for which they were designed,

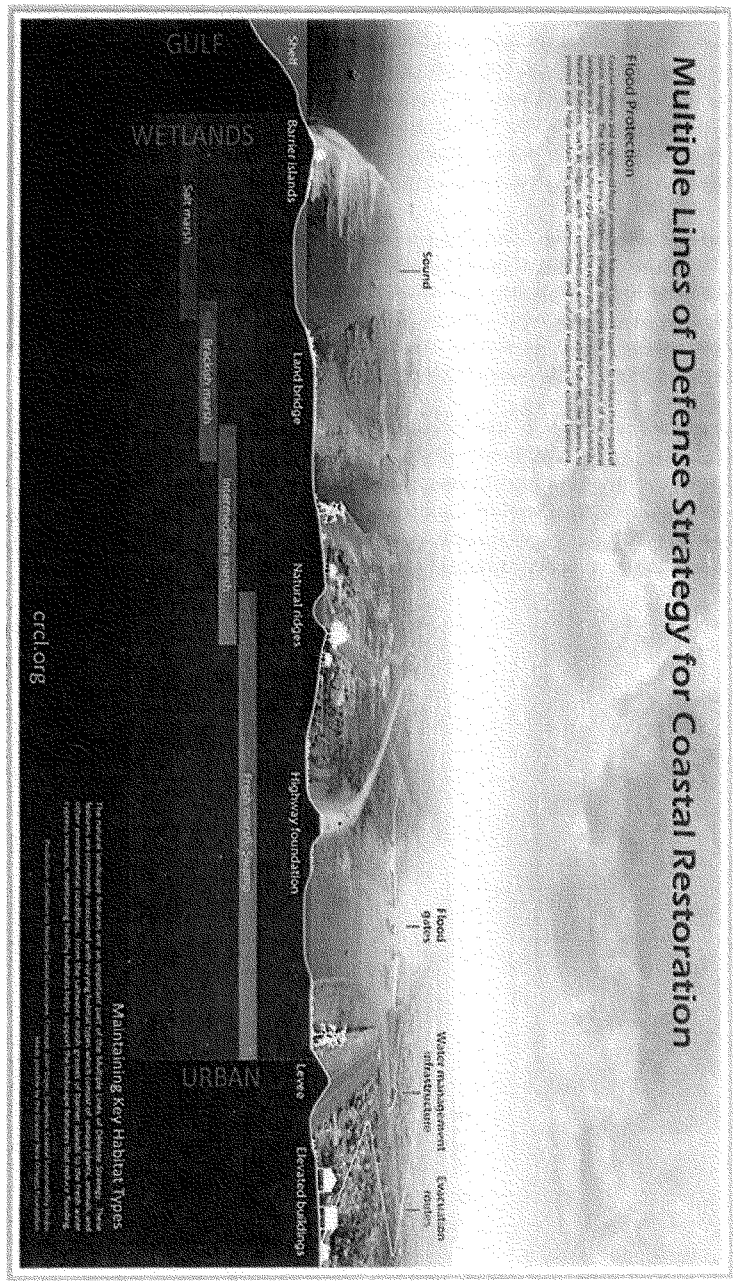
or worse that are operated in such a way that increases risk to communities and causes harm to wildlife habitat and the environment.

To improve project outcomes, we also encourage Congress to direct the Corps to modernize their benefit-cost analyses for flood protection and navigation projects. Current Army Corps benefit-cost analyses are often very inaccurate, with *actual* costs and benefits bearing little to no relation to the benefit-cost ratio used to justify Congressional approval. Among other problems, Corps benefit-cost analyses typically significantly understate actual construction costs, and fail to account for the costs of environmental damage, or the value of the ecosystem services lost as a result of the project.

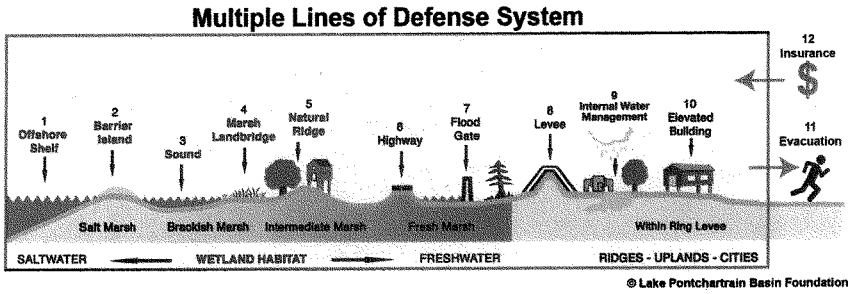
Funding: As coastal and inland flooding challenges mount, and as landscape scale issues require larger projects, the question of how to pay for them grows in urgency. Governmental funding options will be critical, but alone insufficient. A strong federal partner is needed to catalyze partnerships and make a serious commitment to resiliency. We encourage the Committee to ensure that federal agencies including the Corps are, as much as possible, equipped with the tools, capabilities, and financing flexibilities to do large scale restoration.

For example, in the case of the Gulf Coast Ecosystem Restoration Council, on which the Army Corps sits, dollars available to fund restoration projects pursuant to the BP settlement are disbursed in increments over the course of 15 years, making large scale restoration difficult. This could be addressed by granting the RESTORE Council bonding and borrowing authority – providing them the flexibility to make strategic investments in large-scale projects across the Gulf upfront, rather than having to wait for the money to gradually accumulate before it can be used.

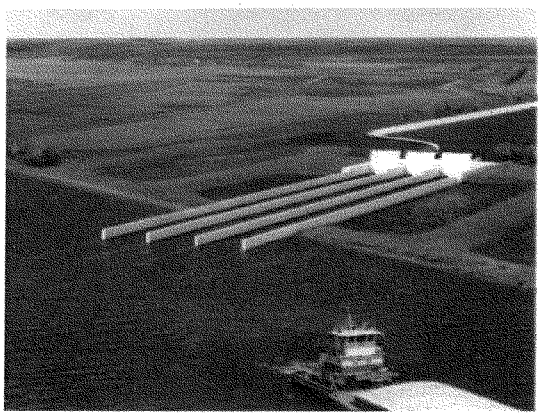
Attachment A: Louisiana's Strategy for Coastal Restoration



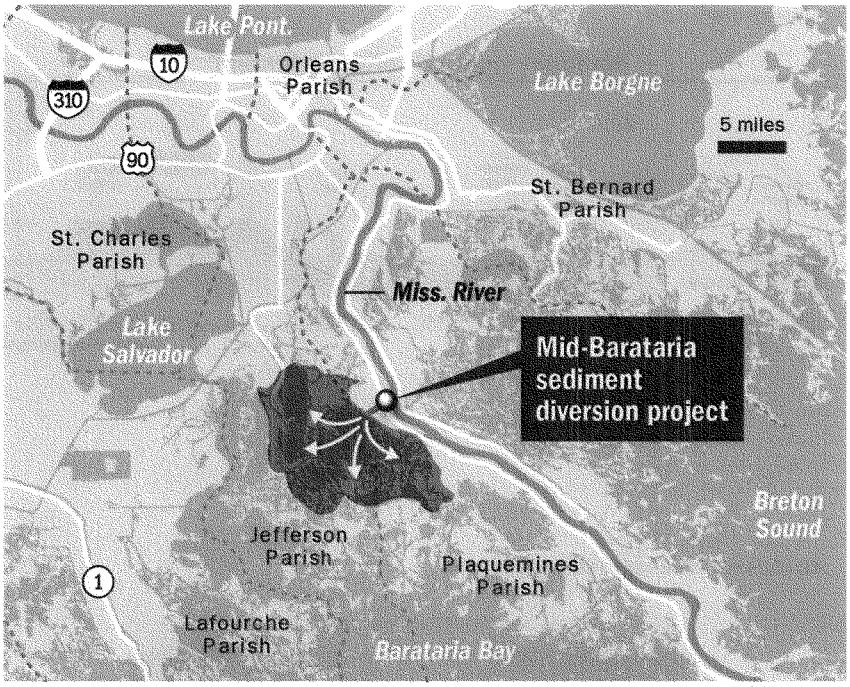
Attachment B: Integrated coastal framework based on Corps of Engineers North Atlantic Coast Comprehensive Study



Attachment C: Mid-Barataria Sediment Diversion



Attachment D: Location and Area of Influence for Mid-Barataria Sediment Diversion



Advocate map

Statement of the National Wildlife Federation
Melissa Samet, Senior Water Resources Counsel

Committee on Environment and Public Works
United States Senate
America's Water Infrastructure Needs and Challenges

January 10, 2018

Chairman Barrasso, Ranking Member Carper, and members of the Committee, thank you for the opportunity to present this statement on America's Water Infrastructure Needs and Challenges. The National Wildlife Federation appreciates the opportunity to present our recommendations for ensuring that U.S. Army Corps of Engineers (Corps) planning can produce cost-effective, environmentally sound solutions to address America's water resources needs.

The National Wildlife Federation is the nation's largest conservation education and advocacy organization with almost six million members and supporters, and affiliate conservation organizations in 51 states and territories. The Federation has a long history of working to protect and restore the nation's rich array of water resources and modernize the Corps' planning process. We have extensive experience with all aspects of Corps planning, including restoration, flood damage reduction, navigation, and project operations.

The Federation works closely with organizations across the country to improve water resources planning. The Federation is a founding member of the Restore the Mississippi River Delta coalition, a coalition of national and local organizations working together to advance landscape scale restoration of the Mississippi River Delta. The Federation also leads the Water Protection Network, a coalition of more than 260 local, regional, and national organizations from across the country working to ensure that America's water resources policies and projects are environmentally and economically sound.

The National Wildlife Federation calls on Congress to usher in a new approach to water resources planning that prioritizes use of natural infrastructure and modern techniques to solve water resources problems. Natural infrastructure—healthy rivers, wetlands, and floodplains—provide essential fish and wildlife habitat, clean water, extensive economic opportunities, and important protections from storms and floods. As fully recognized by the Reinsurance Association of America:

> "One cannot overstate the value of preserving our natural systems for the protection of people and property from catastrophic events."[1]

Utilizing natural infrastructure to reduce damages from floods and storms is a cost-effective way to help communities address more intense storms like Hurricanes Harvey and Sandy, more frequent and intense floods and droughts, rapidly rising sea levels, and the unintended consequences of many already-constructed water resources projects.

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[1] Restore America's Estuaries, *Jobs & Dollars BIG RETURNS from coastal habitat restoration* (September 14, 2011) (http://www.estuaries.org/images/81103-RAE_17_FINAL_web.pdf).

The National Wildlife Federation urges Congress to enact the common sense reforms outlined in this Statement to give the Corps the authority and direction it needs to: (1) advance the use of natural infrastructure; and (2) operate the vast array of federal water resources infrastructure in a manner that both restores natural infrastructure and addresses modern needs. The Federation also respectfully urges Congress to refrain from undermining sound planning by imposing any additional limitations on National Environmental Policy Act review or public input for federal water resources projects.

I. Enact Common Sense Reforms to Protect People, Jobs, and Wildlife

The common sense, good government reforms outlined below would give the Corps the authority and direction it needs to increase use of natural infrastructure where appropriate, and to operate the vast array of federal water resources infrastructure in a manner that both restores natural infrastructure and addresses modern needs. These reforms would help protect people and wildlife, and promote effective and environmentally sound solutions to the nation's many pressing water resources needs.

- **Use Natural Infrastructure Where Possible: Congress should require use of cost-effective natural infrastructure measures for storm and flood damage reduction where they can provide an appropriate level of protection and benefits. To ensure a meaningful assessment of such solutions, Congress should also require the Corps to include a full evaluation of a natural infrastructure alternative in each Corps study addressing flood and storm damage reduction.**[2] These reforms would build on existing law, codify what is supposed to be current practice, establish a common sense approach to planning, and promote sound floodplain management.[3] Natural infrastructure is a cost-effective way to solve water resource problems; protect people, wildlife, and businesses that rely on healthy rivers, coasts, and wetlands; and comply with the National Water Resources Planning Policy.[4]

- **Modernize Operation of Existing Projects: Congress should require the Corps to evaluate and update operating plans and water control manuals for large-scale Corps projects at least every 10 years and implement needed operational changes.** Many major Corps projects are being operated under antiquated, decades-old water control manuals (that guide reservoir operations and river flows) and navigation plans (that guide dredging, channel modifications, and water levels behind locks and dams). Outdated plans cause significant harm to fish and wildlife and the environment, increase flood risks for many communities, and aggravate increasingly contentious

[2] A full evaluation would include a complete analysis of impacts, a detailed mitigation plan if needed, and a full assessment of benefits and costs for projects requiring a benefit-cost analysis.

[3] The Corps has been required to consider nonstructural alternatives when planning flood damage reduction projects since 1974 (33 U.S.C. 701b-11). In 2007 Congress directed that all water resources projects are to protect and restore the environment (42 USC 1962–3). In 2016 Congress directed that the Corps give appropriate consideration to natural infrastructure in Corps feasibility studies (33 USC 2289a), but the Corps' implementing guidance for this provision does not require a full evaluation of natural infrastructure alternatives. Despite these statutory requirements, the Corps rarely adopts natural infrastructure solutions even where such solutions would provide appropriate benefits at less cost.

[4] 42 U.S.C § 1962–3 (Section 2031 of Public Law 110–114, 121 Stat. 1082). The National Water Resources Planning Policy established in 2007 directs that all federal water resources projects – including operation of the nation's vast array of existing water infrastructure – must protect and restore the environment, seek to promote sustainable economic development, and seek to avoid the unwise use of floodplains. To carry out this directive, Congress directed the Corps to, among other things, protect and restore the functions of natural systems and to mitigate any unavoidable damage to those systems.

water supply conflicts. Regular updating of operating plans would ensure that the extensive array of federal water resources infrastructure is managed with state of the art approaches that can improve operations, address modern needs and conditions, *and* protect the environment.

- **Utilize Federal and State Expertise: Congress should require evaluation and mitigation of fish and wildlife impacts from Corps projects consistent with recommendations of fish and wildlife experts under the Fish and Wildlife Coordination Act. Congress should also require formal consultation between the Corps and FEMA on the potential flood impacts of water resources projects and avenues for reducing any such impacts.** Fish and Wildlife Coordination Act review is a longstanding, critically important component of water resources planning and utilizing the expert recommendations in these reviews is a common sense, cost-effective way to make projects better. However, Corps planners continue to ignore recommendations from the nation's fish and wildlife experts, leading to projects that cause unnecessary harm and to mitigation plans that do not work. FEMA rarely comments on Corps water resource project planning despite the fact that many Corps projects, including some navigation projects, have profound impacts on flooding, flood risks, floodplains, and floodplain development. Formal consultation would help ensure that projects do not increase flood risks.

- **Fully Account for Project Costs and Benefits: Congress should require the Corps to fully account for project costs, including lost ecosystem services and full life-cycle costs, and to properly account for project benefits, for all projects requiring a benefit-cost ratio.** Corps benefit-cost analyses are often wildly inaccurate with *actual* costs and benefits bearing little to no relation to the benefit-cost ratio used to justify Congressional approval. Among other problems, these analyses: (a) typically significantly understate actual construction costs; (b) fail to account for the costs of environmental damage; (c) include benefits from activities that are contrary to law or sound resource management (*e.g.*, counting agriculture or development benefits created by draining wetlands); and (d) often include flood damage reduction benefits on lands subject to federal flood or conservation easements. Modernizing these analyses would help ensure that Congress and the public understand the true value of proposed projects.

- **Incentivize Use and Protection of Natural Infrastructure: Congress should modify the non-federal cost share for flood and storm damage reduction projects to incentivize the use of natural infrastructure approaches. Congress should also establish a meaningful non-federal cost share for operations and maintenance of little-used segments of the inland waterways system.** Establishing a reduced or sliding-scale non-federal cost share for natural infrastructure projects would incentivize communities to embrace such solutions where appropriate. Creating a meaningful non-federal cost share for operations and maintenance of low use waterways would minimize maintenance-induced damage to natural infrastructure on waterways that are rarely used. Currently, operations and maintenance for all segments of the inland waterways system are funded 100% by federal taxpayers – not waterway users – and now represent the majority of the cost of this system, which percentage-wise receives the highest US transportation subsidy.

While structural projects will continue to be needed in some circumstances, these reforms will spur the Corps to utilize natural infrastructure on a broader scale. These reforms build on the Corps' establishment of a community of practice known as SAGE that works to advance the integrated use of natural infrastructure for coastal risk reduction, and the Corps' handful of recommendations that add some natural infrastructure components to large structural projects.

For many decades, Corps efforts to protect communities from storms and floods have focused on constructing large-scale gray infrastructure such as levees, floodwalls, dikes, and dams. Indeed, the Department of the Army Inspector General has found that the Corps has an institutional bias for constructing these types of projects.[5] This approach to project planning—which continues to this day—has made freshwater species the most imperiled group of fish and wildlife in North America.

While structural Corps projects have provided some benefits, they have also caused significant—and often avoidable—harm to rivers, coasts, wetlands, and floodplains and the many vital and free services those resources provide. The adverse impacts of large-scale structural projects are greatly aggravated by outdated and environmentally damaging operating plans that cannot account for modern conditions and needs. The health of natural systems degraded by Corps projects and project operations continues to decline due to rising sea levels, rising water temperatures, salt water intrusion, invasive species, and the increasing frequency and intensity of extreme drought and storm events.

Notably, the extensive use of structural projects has not stemmed the nation's skyrocketing flood and storm damages—and indeed, damages are increasing at least in part due to the false sense of security that such structures can create. From 2000 through 2014, inland flooding took 1,010 lives and caused more than $129 billion in damage.[6] Since 2015, just the 8 largest inland floods took an additional 130 lives and caused $24.5 billion in damage.[7] Coastal storms caused even more harm. The 22 largest Hurricanes between 2000 and 2017 took 2,938 lives and caused more than $450 billion in damages, a number that will skyrocket once the damages from Hurricanes Harvey, Irma, and Maria are assessed. Hurricanes Katrina and Sandy alone caused more than $230 billion in damage.[8]

The adverse impacts of large-scale structural projects and outdated project operations are further aggravated by Corps planning that treats flood damage reduction, navigation, and restoration as completely separate business lines. This flawed approach ignores the overlapping and cumulative impacts of these various types of projects and the integrated nature and complexity of the affected rivers, wetlands, floodplains, and coastal systems. It also ignores the synergies that can be gained for environmental protection and public safety by more effectively coordinating activities between the Corps' multiple mission areas and projects.

Mission siloing has resulted in many projects that work against each other. For example, the Corps' management of navigation on the Middle Mississippi River is directly undermining Corps flood damage reduction and restoration projects on the river. Extensive peer-reviewed science demonstrates that river training structures, which are a tool used by the Corps to help maintain navigation on the Middle Mississippi, have increased flood levels by up to 15 feet in some locations and 6 to 10 feet in broad

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[5] Department of the Army Inspector General (Case No. 00-019), Investigation of Allegations against the U.S. Army Corps of Engineers Involving Manipulation of Studies Related to the Upper Mississippi River and Illinois Waterway Navigation Systems, November 2000 (finding that the Corps deceptively and intentionally manipulated data in an attempt to justify a $1.2 billion lock expansion project and that the Corps has an institutional bias for constructing costly, large scale structural projects).

[6] NOAA, National Weather Service , Hydrologic Information Center Flood Loss Data http://www.nws.noaa.gov/hic/index.shtml

[7] NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters (2017). https://www.ncdc.noaa.gov/billions/.

[8] *Id.*

stretches of the river where these structures are prevalent.[9] These structures have also caused significant losses of important wildlife habitat. Much of this damage could be avoided entirely, as navigation can readily be maintained without the vast majority of river training structures.

A. Natural Infrastructure Protects People, Wildlife, and the Economy

Communities are increasingly suffering the adverse impacts of more intense storms and more frequent floods. These impacts often reverberate throughout the nation's economy, particularly when severe weather strikes vulnerable areas like coastal Louisiana that support critical industries and nationally significant navigation infrastructure. With the right direction from Congress, the Corps would be uniquely positioned to advance the use and restoration of natural infrastructure to help protect communities, fish and wildlife, and extensive economic opportunities.

Natural infrastructure—healthy rivers, wetlands and floodplains—can be used both alone and in conjunction with structural projects to provide important protections for communities from storms and floods. As recognized by the Reinsurance Association of America:

> "One cannot overstate the value of preserving our natural systems for the protection of people and property from catastrophic events."[10]

Many approaches to water resources planning can restore and protect vital natural infrastructure. These include reestablishing the natural form, function, hydrology, and inundation of rivers, floodplains, and wetlands by removing or modifying levees (including moving levees further away from the river, *i.e.*, levee setbacks), dams, river training structures, cut offs, and culverts. Other approaches include purchasing flood or flowage easements; relocating flood-prone properties; using wetland buffers to protect levees; placing protections on wetlands and floodplains; utilizing water conservation and efficiency measures; establishing a navigation scheduling process; and improving management of existing water resources projects.

Living shorelines are a prime example of natural infrastructure. Living shorelines are constructed with natural materials including vegetation, fiber logs, and marsh sills to protect coasts from erosion. While living shorelines may not be appropriate everywhere, they are a demonstrably viable, often more effective, and environmentally-preferable alternative to traditional structural projects like bulkheads.

Living shorelines enhance coastal habitats, including by creating nursery grounds for fish and shellfish, providing feeding grounds for shorebirds and wading birds, and helping reduce water pollution. Living shorelines are more effective at preventing erosion than structural projects and are highly resilient to storms, as demonstrated by a substantial body of scientific literature. A survey of the North Carolina

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[9] *See, e.g.,* Pinter, N., A.A. Jemberie, J.W.F. Remo, R.A. Heine, and B.A. Ickes, 2010. Empirical modeling of hydrologic response to river engineering, Mississippi and Lower Missouri Rivers. River Research and Applications, 26: 546-571; Remo, J.W.F., N. Pinter, and R.A. Heine, 2009. The use of retro- and scenario- modeling to assess effects of 100+ years river engineering and land cover change on Middle and Lower Mississippi River flood stages. Journal of Hydrology, 376: 403-416.

[10] Restore America's Estuaries, *Jobs & Dollars BIG RETURNS from coastal habitat restoration* (September 14, 2011) (http://www.estuaries.org/images/81103-RAE_17_FINAL_web.pdf).

coast after Hurricane Irene showed no visible damage in living shoreline projects, while 76 percent of bulkheads suffered damage.[11]

Natural Infrastructure Protects People: Natural infrastructure, both alone and in conjunction with structural projects, provides important protection from storms and floods. Natural infrastructure also avoids the risks of catastrophic failure and overtopping of levees, a risk that has caused the Association of State Floodplain Managers to urge communities to use nonstructural measures whenever possible instead of constructing new levees, which should be limited to the option "of last resort."[12]

Wetlands act as natural sponges, storing and slowly releasing floodwaters after peak flood flows have passed, and coastal wetlands buffer the onslaught of hurricanes and tropical storms. A single acre of wetland can store one million gallons of floodwaters.[13] Just a one percent loss of a watershed's wetlands can increase total flood volume by almost seven percent.[14] Restoring a river's natural flow and meandering channel, and giving at least some floodplain back to the river, slows down floodwaters and gives the river room to spread out without harming homes and businesses.

California's wetlands provide nearly $10 billion each year in flood control, groundwater recharge, and water purification benefits. The Corps estimates that protecting wetlands along the Charles River in Boston saves $17 million annually in potential flood damage.[15] A comprehensive study carried out by the Wetlands Initiative shows that restoring the 100-year flood zone of the Upper Mississippi five-state watershed could store 39 million acre-feet of floodwater, the volume that caused the Great Flood of 1993, and save over $16 billion in projected flood damage costs.[16]

During Hurricane Katrina, coastal wetlands reduced storm surge in some New Orleans neighborhoods by two to three feet, and levees with wetland buffers had a much greater chance of withstanding Katrina's fury than those levees without wetland buffers.[17] Indeed, natural infrastructure is so important that

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[11] S. Sharma et al., *A Hybrid Shoreline Stabilization Technique: Impact of Modified Intertidal Reefs on Marsh Expansion and Nekton Habitat in Northern Gulf of Mexico,* 90 Ecological Engineering, 339-50 (2016); Amanda S. Lawless et al., *Effects of shoreline stabilization and environmental variables on benthic infaunal communities in the Lynnhaven River System of Chesapeake Bay*, 457 J. of Experimental Marine Biology & Ecology, 41-50 (2014); J. E. Manis et al., *Wave Attenuation Experiments Over Living Shorelines Over Time: A Wave Tank Study to Assess Recreational Boating Pressures,* 19 J. of Coastal Conservation, 1-11 (2015); S. Crooks & R. K. Turner, *Integrated coastal management: sustaining estuarine natural resources*, in 29 Advances in Ecological Res., 241–289 (Nedwell, and Raffaelli., eds. 1999); Rachel K. Gittman et al., *Marshes with and without Sills Protect Estuarine Shorelines from Erosion Better than Bulkheads During a Category 1 Hurricane*, 102 Ocean & Coastal Mgmt., 94-102 (2014).

[12] Association of State Floodplain Managers White Paper, National Flood Policy Challenges, Levees: The Double-edged Sword, Adopted February 13, 2007.

[13] Environmental Protection Agency, *"Wetlands: Protecting Life and Property from Flooding." EPA 843-F-06-001.* (2006) *(factsheet)* ("EPA Wetlands and Flooding Fact Sheet").

[14] Demissie, M. and Abdul Khan. 1993. "Influence of Wetlands on Streamflow in Illinois." Illinois State Water Survey, Contract Report 561, Champaign, IL, Table 7, pp. 44-45.

[15] EPA Wetlands and Flooding Fact Sheet

[16] *Flood Damage Reduction in the Upper Mississippi River Basin—An Ecological Alternative*. 2004. Donald L. Hey, et al. The Wetlands Initiative, Chicago, IL. Available at www.wetlands-initiative.org.

[17] Bob Marshall, *Studies abound on why the levees failed. But researchers point out that some levees held fast because wetlands worked as buffers during Katrina's storm surge,* The New Orleans Times-Picayune (March 23, 2006).

Louisiana's *2012 Comprehensive Master Plan for a Sustainable Coast* is proposing to spend three quarters of its funding over the next fifty years to carry out restoration and nonstructural measures.[18]

Natural Infrastructure Sustains Wildlife: Healthy rivers, floodplains, and wetlands provide vital fish and wildlife habitat and allow people and wildlife to benefit from natural flood cycles. In a healthy, functioning river system, natural floods deposit nutrients along floodplains creating fertile soil for bottomland hardwood forests. Sediment transported by floods form islands and back channels that are home to fish, birds, and other wildlife. By scouring out river channels and riparian areas, floods prevent rivers from becoming overgrown with vegetation. Floods also facilitate breeding and migration for a host of fish species, and provide vital connectivity between habitat areas. In the deltas at the mouths of rivers, floods release freshwater and sediment, sustaining and renewing wetlands that protect coastal communities from storms and provide nurseries for multibillion dollar fisheries.

Wetlands are some of the most biologically productive natural ecosystems in the world, and support an incredibly diverse and extensive array of fish and wildlife. America's wetlands support millions of migratory birds and waterfowl. Up to one-half of all North American bird species rely on wetlands. Although wetlands account for just about five percent of land area in the lower 48 states, those wetlands are the only habitat for more than one third of the nation's threatened and endangered species and support an additional 20 percent of the nation's threatened and endangered at some time in their life. These same wetlands are home to 31 percent of the nation's plant species.[19]

Natural Infrastructure Drives the Economy: Healthy rivers, floodplains, and wetlands are economic drivers for outdoor recreation and commercial fishery-based economies. Projects that restore those resources are also an important creator of jobs that are of necessity local and cannot be exported.

Ninety percent of fish caught by America's recreational anglers are wetland dependent, as are hundreds of species of birds, waterfowl, and wildlife. The U.S Fish and Wildlife Service estimates that in 2011, anglers spent "$41.8 billion on trips, equipment, licenses, and other items to support their fishing activities." That same year, nearly 71.8 million people "fed, photographed, and observed wildlife," spending $55 billion on those activities. In all, nearly 90.1 million Americans participated in some form of fishing, hunting or wildlife-associated recreation in 2011, contributing $145 billion to the national economy. "This equates to 1% of gross domestic product; meaning one out of every one hundred dollars of all goods and services produced in the U.S."[20]

Ninety five percent of commercially harvested fish and shellfish are wetland dependent. Healthy coasts "supply key habitat for over 75% of our nation's commercial fish catch and 80-90% of the recreational fish catch."[21] Healthy rivers are equally important to these fisheries and the economic benefits they provide. Commercial fishing in the Apalachicola River and Bay (which relies on river flows to remain healthy) contributes $200 million annually to the regional economy and directly supports up to 85 percent of the local population.

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[18] *Louisiana's Comprehensive Master Plan for a Sustainable Coast* 2012. Coastal Protection and Restoration Authority of Louisiana. Baton Rouge, LA. at 36-37.
[19] Environmental Protection Agency, Economic Benefits of Wetlands, EPA843-F-06-004 (May, 2006) (factsheet).
[20] U.S. Fish and Wildlife Service, 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation: National Overview, Issued August 2012. This study is the source for all quotes and data in this paragraph.
[21] Restore America's Estuaries, *Jobs & Dollars BIG RETURNS from coastal habitat restoration* (September 14, 2011) (http://www.estuaries.org/images/81103-RAE_17_FINAL_web.pdf).

Efforts to restore natural infrastructure are an important creator of jobs. Restore America's Estuaries reports that coastal restoration "can create more than 30 jobs for each million dollars invested" which is "more than twice as many jobs as the oil and gas and road construction industries combined."[22]

In Louisiana, a proposed $72 million project to restore a 30,000-acre expanse of degraded marsh near downtown New Orleans known as the Central Wetlands Unit would create 689 jobs (280 direct jobs and 400 indirect and induced jobs) over the project's life.[23] Implementation of the entire $27.6 billion dollars of restoration in Louisiana's Master Plan over the next fifty years would multiply those jobs hundreds of times over. In Florida, restoration of the Everglades will produce more than 442,000 jobs over the next 50 years and almost 23,000 short- to mid-term jobs for the actual restoration work. Restoring the Everglades is also predicted to produce a return of four dollars for each dollar invested.[24]

Coastal restoration projects carried out under the U.S. Fish and Wildlife Service's Partners for Fish and Wildlife Program and Coastal Program in FY2011 returned $1.90 in economic activity for every dollar spent on restoration. In California, the rate of return was $2.10 for every dollar spent.[25] The Department of the Interior's FY2010 investment of $156 million for ecosystem restoration activities in the Chesapeake Bay, Great Lakes, and Everglades supported more than 3,200 jobs and contributed more than $427 million in economic outputs.[26]

In Oregon, a $411 million investment in restoration from 2001 to 2010 generated an estimated $752 to $977 million in economic output. The 6,740 restorations projects completed during that time supported an estimated 4,600 to 6,500 jobs, including jobs in construction, engineering, wildlife biology, and in supporting local businesses such as plant nurseries and heavy equipment companies. On average, $0.80 of every $1.00 spent on a restoration project in Oregon stays in the county where the project is located and $0.90 stays in the state.[27]

B. Outdated and Poorly Developed Operating Plans Harm People and Wildlife

Outdated operating plans can significantly increase the risk of flooding for many communities, and cause widespread harm to the environment. These outdated plans cannot account for current needs or environmental conditions, including changes in rainfall, flood levels, snowmelt patterns, and land use patterns. Outdated plans also fail to use modern scientific tools or state-of-the-art management approaches that can both ensure effective operation of federal projects *and* protect the environment.

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[22] *Id.*

[23] Environmental Defense Fund, Profiles in Restoration: The Central Wetlands Unit, Part VI (May 3, 2010) (http://blogs.edf.org/restorationandresilience/category/central-wetlands-unit/).

[24] Everglades Foundation, Everglades Restoration a 4-to1-Investment (http://everglades.3cdn.net/79a5b78182741ae87f_wvm6b3vhn.pdf).

[25] U.S. Fish and Wildlife Service, *Restoration Returns—The Contribution of Partners for Fish and Wildlife Program (PFW) and Coastal Program Restoration Projects to Local US Economies*, February 2014 (http://www.sfbayjv.org/resourcedocs/usfws-restoration-returns.pdf).

[26] The Department of the Interior's Economic Contributions (Department of the Interior, 2011) at 5, 106 (http://www.doi.gov/news/pressreleases/upload/DOI-Econ-Report-6-21-2011.pdf).

[27] Whole Watershed Restoration Initiative, Oregon's Restoration Economy, Investing in natural assets for the benefit of communities and salmon (2012)(http://www.ecotrust.org/wwri/downloads/WWRI_OR_brochure.pdf).

The implications are significant as the Corps operates hundreds of projects across the country, including 12,000 miles of inland commercial navigation channels, more than 690 dams, and 75 federal hydropower facilities. Many of these projects are being managed under antiquated, decades-old water control manuals (guiding reservoir operations and river flows) and navigation plans (guiding dredging, channel modifications, and water levels behind locks and dams). Some recent planning updates have maintained, or worsened, approaches developed decades ago.

Outdated operating procedures and flawed planning aggravated already horrific flooding in Houston during Hurricane Harvey. During Harvey, the Corps of Engineers released at least 13,000 cubic feet of water per second from the Addicks and Barker reservoirs to reduce the risks of overtopping and to protect homes upstream.[28] But those same releases caused extensive flooding downstream in Buffalo Bayou, flooding some 4,000 homes that would otherwise have remained dry despite Harvey's onslaught.[29] More than 5,000 of the 14,000 homes located inside the reservoirs also flooded. The in-reservoir homes were built on some 8,000 acres of land that the Corps opted not to buy when the reservoirs were constructed in the 1940s, even though the Corps knew the land would flood during large flood events. At least 4,000 homes were built inside the reservoirs since Tropical Storm Allison devastated large areas of Houston in 2001.[30]

Updating the management plans for these reservoirs and quickly completing critical structural upgrades would help protect Houstonians during future flood events.[31] These reservoirs have been classified as two of the six most dangerous flood control dams in the United States for many years. Storage capacity could be restored by removing silt and sediment that have accumulated over the last 60-plus years of operation, and public safety would be improved by upgrading gages and other tools that track the quantity of water released from the reservoirs and by ensuring that the public is fully aware of the potential for flood risks from both typical and emergency reservoir operations.

The importance of improving reservoir management and safety is not limited to Houston. The Corps operates 707 dams that it owns across the country and manages flood control operations at 134 dams constructed or operated by other federal, nonfederal, or private agencies. Many of these dams have operating plans that date back 50 years, including many of central California's 35 federal flood control dams where outdated plans are damaging rivers and wildlife and threatening community safety.

Outdated operating plans are not limited to those for reservoirs. For example, the vast majority of management plans for the Mississippi River navigation system are more than 40 years old.[32] As a result, the Corps continues to carry out the same operation and maintenance activities that have devastated the ecological health of the Mississippi River and the species that rely on it. These outdated operations

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[28] Preliminary U.S. Geological Survey data suggests that the actual releases were much higher than what was supposed to be a maximum release of 13,000 cubic feet per second because the gages measuring the releases were not working properly (https://af.reuters.com/article/africaTech/idAFL2N1LQ0IL).

[29] KHOU.com, Houston Texas, *Buffalo Bayou to remain at record level; Barker, Addicks reservoirs have peaked* (September 1, 2017) (http://www.khou.com/weather/hurricanes/hurricane-harvey/controlled-release-of-barker-addicks-reservoirs-to-impact-thousands/468348109).

[30] Al Shaw, Lisa Song, Kiah Collier, Neena Satija, *How Harvey Hurt Houston, in 10 Maps,* ProPublica (January 3, 2018) (https://projects.propublica.org/graphics/harvey-maps).

[31] A 2009 master plan limits releases from the reservoirs to 2,000 cubic feet per second. http://www.swg.usace.army.mil/Portals/26/docs/2009%20Addicks%20and%20Barker%20MP.pdf at 8.

[32] Aa a result of extensive pressure, the Corps recently reassessed some, but not all, of its management activities for a segment of that system known as the Middle Mississippi River.

and maintenance activities are destroying critical backwater, side channel, wetlands, and instream habitats; altering water depth; destroying bathymetric diversity; causing nonnative species to proliferate; and severely impacting native species.[33] Modern approaches exist for operating this system that would both maintain a vibrant navigation system and improve the health of the river.

Updated operating plans that ignore the recommendations of the nation's fish and wildlife experts are equally problematic. The Corps' decades-old water control manual for the Apalachicola-Chattahoochee-Flint (ACF) system has allowed the Corps to starve the Apalachicola River in Florida of the freshwater flows needed to maintain this river, which is one of the most ecologically rich river systems in North America, and the vitally important Apalachicola Bay. The Corps' refusal to send sufficient freshwater flows to the Apalachicola River and Bay in 2012 led to a federal declaration of a commercial fishery failure for Florida's oyster harvesting in the Gulf of Mexico. Florida has testified that "the ecosystem and, indeed, the very way of life for generations of Floridians will be devastated" if flow patterns that mimic the historic flow regime are not restored for the Apalachicola River.[34]

However, instead of working to alleviate this dire situation, a recently completed update to the ACF water control manual would make the ecological conditions in the Apalachicola River and Bay even worse. This new manual would hold significantly more water back for Georgia water supply, initiate drought restrictions earlier and more frequently, and severely restrict flows to the Apalachicola River more often and for longer periods of time.[35] Many of the problems with the new ACF water control manual could have been avoided had the Corps addressed the important recommendations made by the U.S. Fish and Wildlife Service in the project's Final Fish and Wildlife Coordination Act Report. These recommendations included utilizing a different approach for analyzing impacts and for developing alternatives that would reduce the adverse environmental and wildlife impacts without jeopardizing other authorized purposes.

II. Retain Robust Environmental Reviews to Improve Projects and Protect Taxpayers

Environmental review and meaningful public input under the National Environmental Policy Act (NEPA) provide critical input and transparency that lead to better, more effective water resources projects. Indeed, as eight past chairs of the Council on Environmental Quality have concluded, NEPA review is a prerequisite for responsible agency action:

> [C]onsideration of the impacts of proposed government actions on the quality of the human environment is essential to responsible government decision-making. Government projects and programs have effects on the environment with important consequences for every American, and those impacts should be carefully weighed by

[33] U.S. Geological Survey, Ecological Status and Trends of the Upper Mississippi River System 1998: A Report of the Long Term Resource Monitoring Program (April 1999); Johnson, B. L., and K. H. Hagerty, editors. 2008. U.S. Geological Survey, *Status and Trends of Selected Resources of the Upper Mississippi River System,* December 2008, Technical Report LTRMP 2008-T002 (Upper Midwest Environmental Sciences Center, La Crosse, Wisconsin).
[34] Testimony of Jonathan P. Steverson, Executive Director of the Northwest Florida Water Management District, "Effects of Water Flows on Apalachicola Bay: Short and Long Term Perspectives", United States Senate Committee on Commerce, Science and Transportation Field Hearing, August 13, 2013 at 4.
[35] The excessive damage that would be caused by the new water control manual has forced the State of Alabama and conservation organizations, including the National Wildlife Federation, to challenge the manual in court.

> public officials before taking action. **Environmental impact analysis is thus not an impediment to responsible government action; it is a prerequisite for it.**[36]

Effective environmental reviews expose the true cost of environmentally damaging and ill-conceived proposals, leading to better and far less damaging projects and substantial savings for federal taxpayers.

For example, preparation of a supplemental environmental impact statement led the Corps to save more than 4,300 acres of wetlands that would have been destroyed had the Corps followed its original plan for raising levees along the Mississippi River.[37] Environmental review of the proposed Bolinas Lagoon dredging project in California demonstrated that the Corps' proposal would cause extensive harm to one of the most pristine tidal lagoons in California and was not necessary, saving taxpayers $133 million. The environmental review process exposed the devastating environmental impacts of the Yazoo Backwater Pumping Plant project in Mississippi, prompting the George W. Bush Administration to veto the project. This saved taxpayers more than $220 million and protected 200,000 acres of wetlands – an area the size of all 5 boroughs of New York City.

When resource agency concerns are ignored or necessary studies are not done, the results can be devastating. Prior to construction of the Mississippi River Gulf Outlet (MRGO) in Louisiana, the U.S. Fish and Wildlife Service raised serious concerns and recommended additional environmental and hydrologic modeling, but the Corps ignored this advice. Since its construction, the MRGO has destroyed more than 27,000 acres of coastal wetlands and damaged more than 600,000 acres of coastal ecosystems surrounding the Greater New Orleans area. During Hurricane Katrina, the MRGO funneled Katrina's storm surge into New Orleans, resulting in devastating flooding in St. Bernard Parish and the lower Ninth Ward.

As law professors from across the country have concluded:

> Corps proposals typically involve large scale structural measures with multiple and complex impacts that can radically transform entire ecosystems. Full and meaningful assessments of such projects – including independent, detailed reviews by the resource agencies – are essential for preventing the construction of poorly-designed projects that cause significant and avoidable damage to the nation's natural resources and put communities at risk. Such reviews are particularly important given the Corps' well recognized institutional bias towards construction of large scale structural projects and its long history of flawed analyses.[38]

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[36] September 19, 2005 Letter to the Honorable Cathy McMorris, Chair of the Task Force on Improving the National Environmental Policy Act from Russell E. Train (CEQ Chair 1970-1973), Russell W. Peterson (CEQ Chair 1973-1976), John Busterud (CEQ Chair 1976-1977), Charles W. Warren (CEQ Chair 1977-1979), J. Gustave Speth (CEQ Chair 1979-1981), Michael R. Deland (CEQ Chair 1989-1993), Kathleen A. McGinty (CEQ Chair 1995-1998), George T. Frampton Jr. (CEQ Chair 1998-2001), Gary Widman (CEQ General Counsel 1974-1976), Nick Yost (CEQ General Counsel 1977-1981) (emphasis added).

[37] Brief of Plaintiffs-Appellants, United States Court of Appeals for the Fifth Circuit, *Mississippi River Basin Alliance et al v. Lancaster et al.*, Case Number 99-31235, at 7 (January 26, 2000) (the supplemental EIS concluded that the traditional method of construction would destroy at least 11,654 acres of wetlands while the new alternative selected by the Corps would destroy 7,328 acres). The Corps continued to work on critical elements of this project while it prepared the supplemental environmental impact statement.

[38] Letter from 50 professors of Administrative Law, Environmental Law, and Natural Resources Law and Policy to Members of the Senate, dated April 8, 2013 (urging the Senate to strike the section 2032 and 2033 streamlining provisions for Corps projects from S.601). Between 1994 and 2011, at least 35 reports from the National Academy

Effective environmental review does not delay projects that are in the national interest. Project delays are caused by poor planning, lack of interagency coordination, funding constraints, and the Corps' $60 to $80 billion backlog of authorized but unconstructed projects that must be periodically funded to remain authorized. Several Congressional Research Service reports conclude that lack of funding is the primary obstacle for project completion and has the greatest impact on project delivery timelines.

Despite the many benefits of comprehensive environmental review, and despite extensive opposition from the conservation community and leading experts, the Water Resources Reform and Development Act (WRRDA) of 2014 instituted dramatic rollbacks to the NEPA review process for Corps projects. Given the benefits of environmental review it is critical that the Committee refrain from imposing any additional limitations on NEPA review or public input for federal water resources projects.

Instead, once the WRRDA 2014 review and planning changes are fully implemented, Congress should ask the General Accounting Office to conduct a comprehensive assessment of the impacts of those changes on effective environmental review, meaningful public participation, harm to the environment, and whether, in fact, they led to any significant improvement in project delivery. Congress should then take steps, including rescinding or modifying WRRDA 2014 changes if necessary, to ensure that the environmental impacts of water resources projects are fully, fairly, and openly evaluated as required by NEPA.

III. Conclusion

The National Wildlife Federation calls on the Committee and Congress to enact the common sense reforms outlined in this Statement that would give the Corps the authority and direction it needs to advance the use of natural infrastructure and operate the vast array of federal water resources infrastructure in a manner that both restores natural infrastructure and addresses modern needs.

The Federation also respectfully urges the Committee and Congress to refrain from undermining sound planning by imposing any additional limitations on National Environmental Policy Act review or public input for federal water resources projects.

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of Sciences, Government Accountability Office, Army Inspector General (which found that the Corps had intentionally manipulated data to justify a billion dollar project), National Academy of Public Administration, U.S. Commission on Ocean Policy, and independent experts revealed major flaws in Corps project planning and implementation and urged substantial changes to the Corps' planning process.

Audubon

NATURAL INFRASTRUCTURE REPORT

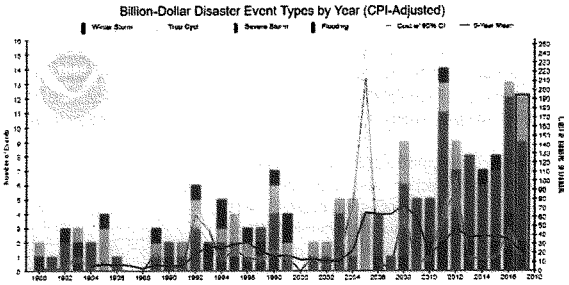
Audubon works at over 1,000 sites across all our coasts. At some of these sites, we are pioneering efforts to tackle extreme weather events and sea level rise for birds and people through natural infrastructure projects. As we have seen from recent hurricanes, developing natural infrastructure is more critical than ever. Combined, Hurricanes Harvey, Irma, Maria and Nate caused over 200 deaths, an estimated $330-630 billion in damages, evacuation of millions of people, and extreme habitat loss. Federal investment in natural infrastructure will help increase preparedness of coastal communities and economies, while benefitting fish and wildlife, which also often provide a critical foundation for coastal economies.

As coastal populations and development increase, so does the severity of coastal threats. The U.S. has experienced an increasing amount of billion dollar disaster events – from 1980-2016 there were 5.5 events per year, but from 2012-2016, there were 10.6. Natural infrastructure is critical to help coastal communities prepare and recover from these events by buffering storm damage, absorbing flood waters, and providing a front line of defense between storm impacts and communities.

Proactively rebuilding eroded barrier islands, restoring wetlands, constructing living shorelines and more help mitigate the impact of hurricanes, flooding, and sea level rise on coastal communities. Natural infrastructure enhances coastal resiliency, creates necessary habitats for birds and other wildlife, and safeguards the robust coastal economy. Coastal regions provide 40% of US employment, support more than 69 million jobs, and generate half of the nation's Gross Domestic Product. Coastal restoration creates 30 jobs for each million dollars invested.

Additionally, natural infrastructure helps decrease the costs of natural disaster damage:

- Studies show that a 2.5-acre decrease in wetlands corresponds to a $33,000 increase in storm damages.
- In the Chesapeake Bay, for every dollar spent constructing living shorelines, up to $1.75 is returned to the economy.
- New Jersey's freshwater wetlands on average save $3 billion per year in avoided losses from floods, storm surges, and other disturbances.



The cost and frequency of billion dollar disasters has increased in the U.S.

We work closely with our partners across the federal government on natural infrastructure and restoration projects, including the Department of Agriculture, Natural Resources Conservation Service; Department of Commerce, National Oceanic and Atmospheric Administration; Department of Defense, Army Corps of Engineers; Department of the Interior, Fish and Wildlife Service; and the Environmental Protection Agency. It is critical that these programs receive adequate funding to decrease future risks and increase preparedness of coastal communities. Natural infrastructure solutions need to be supported as part of the recovery efforts after natural disasters so we build back communities to be stronger and better prepared for future storms. This report highlights some of Audubon's efforts that help tackle both near- and long-term threats confronting wildlife and their habitats while benefiting and sustaining healthy coastal communities.

Photo Credit NOAA

Audubon CALIFORNIA

ARAMBURU ISLAND SHORELINE PROTECTION AND ECOLOGICAL ENHANCEMENT PROJECT

Aramburu Island is located adjacent to Richardson Bay Audubon Center and Sanctuary, along the shoreline in the northwest region of Richardson Bay, south of San Francisco Bay. It was originally created from fill material as part of the Strawberry Spit, but it was converted into a 17-acre island in 1987 as wildlife habitat mitigation for development of the southern portion of the spit. Prior to restoration, the island was degraded by shoreline erosion and non-native plant colonization. The site was designated as an open space area under the Marin County General Plan.

Timeline: 2011-2018
Location: Richardson Bay, Tiburon, California
Partners: Marin County, U. S. Fish and Wildlife Service
Costs: $1.1 million
Funding Source: U.S. Fish and Wildlife Service

View from the Richardson Bay Audubon Center and Sanctuary.

The Aramburu Island Shoreline Protection and Ecological Enhancement Project was funded through recovery efforts from the 2007 Cosco Busan Oil Spill. The project was initiated in 2011 by Audubon California working in partnership with Marin County Department of Parks and Open Space to enhance the natural resource value of the area. The project goals include: 1) reducing erosion of the eastern shoreline; 2) creating wetland and terrestrial habitats to support a range of target species and natural communities; and 3) providing a platform for enhancing resilience to sea-level rise.

Project Benefits:

San Francisco Bay is a highly urbanized area that is home to more than 7 million people. It also supports diverse natural communities dependent on conserving healthy ecosystems in the baylands between the open water to the upland extent of tidal influence. The bayland ecosystems are comprised of an interconnected mosaic of habitats, including the living shorelines at the edge of the bay that provide support of ecological functions for numerous species. Islands and beaches provide critical ecological functions, including providing food or cover for birds.

The project was constructed in 2011 and provided jobs for construction and technical staff to complete the work. It increased coastal resiliency by stabilizing the eroding shoreline through introduction of cobble materials and enhancement of habitats which resulted in an increased use by populations of waterbirds, including nesting Black Oystercatchers. It provided flood and erosion protection for nearby homes along the shoreline, and it served as one of the only models for shoreline enhancement in San Francisco Bay. Ongoing monitoring includes examining waterbird and invertebrate response and oyster restoration.

Audubon employees and volunteers complete ongoing monitoring projects.

Photo Credit Photos provided by John Takekawa, Director of San Francisco Bay Programs, Audubon California

Audubon FLORIDA

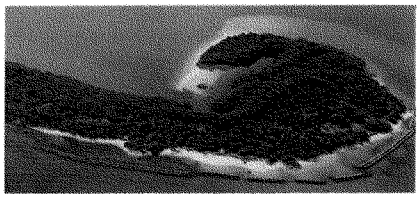
EROSION CONTROL BREAKWATER REEF AT RICHARD T. PAUL ALAFIA BANK BIRD SANCTUARY

The Richard T. Paul Alafia Bank Sanctuary is comprised of two islands in Tampa's Hillsborough Bay, leased from and managed in collaboration with The Mosaic Company and Port Tampa Bay. This Globally Important Bird Area supports more than 13,000 nesting pairs of 18 shorebird, seabird, and wading bird species. Storm-driven waves and increasingly large ship wakes over the years have caused substantial erosion, washing away the sandy shoreline and toppling trees into the water. Audubon works with the Mosaic Company and Port Tampa Bay to add onto the successful existing breakwater oyster reef habitat, which intercepts onshore wave and wake energy from storms and shipping traffic in Tampa Bay, a major port. In addition to ongoing erosion, Hurricane Irma caused damage to the sanctuary where breakwater structures have not been installed. The Alafia Bank continues to experience rapid loss of critical habitat along the northern shoreline not protected by offshore breakwaters. Events like Hurricane Irma exacerbate and accelerate this process and will continue to do so until breakwater array is completed.

Timeline: 2011-TBD
Location: Hillsborough Bay, Tampa Bay, Florida at the mouth of the Alafia River
Partners: The Mosaic Company, Port Tampa Bay, Living Shoreline Solutions, Reef Innovations
Costs: $2.1 million
Funding Sources: National Fish and Wildlife Foundation, Environmental Protection Commission of Hillsborough County, Tampa Bay Estuary Program, Living Shorelines Solutions, Reef Innovations, Coastal Resources Group, Tampa Audubon Society, the Mosaic Foundation, and many donors to Audubon

Project Benefits:

Erosion control at Alafia Bank is beneficial to more than 13,000 nesting pairs, including some of Florida's rarest birds: Little Blue Herons, Tricolored Herons, Reddish Egrets, Roseate Spoonbills and American Osytercatchers. The sanctuary hosts one of the region's largest White and Glossy Ibis colonies and the state's largest spoonbill colony. It also creates underwater structure for benthic invertebrates and their sportfish predators. Seagrass can recruit in the calm waters behind the breakwaters. This is an important site for rare Diamondback Terrapins. Recovery of this species on public lands and private preserves like this one will help reduce any potential regulatory burden on private landowners that would result from their listing.



Breakwater reef protects Alafia Bank from destructive erosion.

In 2016, the Florida Fish and Wildlife Conservation Commission created 13 new and expanded 5 existing Critical Wildlife Areas, essential for the survival of the state's waterbirds. These designations allow for the posting of no-entry, in-water buffers to protect these vulnerable areas from disturbance. Alafia Bank was granted a year-round closure with a buffer, and is among the most important of this network of sites crucial to the survival of these species in Florida.

Erosion control at Alafia Bank provides many jobs and is beneficial to Florida's economy. Each phase has required the subcontracting of private engineering services, wave attenuation device fabrication, barge rental and placement staff. Wildlife viewing in Florida generates more than $5 billion per year in economic impact, from domestic visitors alone. Alafia Bank is responsible for fledging a substantial number of the most sought-after species in the region for birdwatchers, including Reddish Egret, Roseate Spoonbill and American Oystercatcher. The breakwater also provides important reef and essential fish habitat and has become a destination for recreational and professional anglers.

Photo Credit Photo provided by John Landon

Audubon LOUISIANA

MID-BARATARIA SEDIMENT DIVERSION

Within the Barataria Basin, wetland loss averaged 5,700 acres per year between 1974 and 1990 due to natural erosional processes and human activities of channelization, levee construction and development. The Mid-Barataria Sediment Diversion is needed to reverse past and mitigate future land loss. This project will replicate natural deltaic and sedimentation processes by directing sediment, fresh water and nutrients from the Mississippi River into adjacent degrading wetlands in Barataria Basin to build and sustain tens of thousands of acres. The 2017 Louisiana Coastal Master Plan shows that the land area built or maintained by the project, based on Delft-3D modeling analysis, is projected to be approximately 8,000 acres in project year 2020, and nearly 30,000 acres over the 50-year lifespan of the project.

The Mid-Barataria Sediment Diversion has been studied by state and federal agencies since 1984. The project was included in the U.S. Army Corps of Engineers and state of Louisiana civil works study called the Louisiana Coastal Area (LCA) Ecosystem Restoration Study. The study culminated in 2004 with a programmatic level main report and Environmental Impact Statement (EIS). The project has since been included in the state of Louisiana Coastal Master Plans in both 2012 and 2017 as one of its highest priority projects for rebuilding Louisiana's wetlands.

Timeline: Permitting underway with construction set to be completed 2020-2021

Location: Myrtle grove area, Plaquemines Parish, along the west side of the Mississippi River, influencing Barataria Bay

Partners: State of Louisiana and Federal permitting agencies (NOAA, DOI, Corps of Engineers)

Costs: $1.3 billion

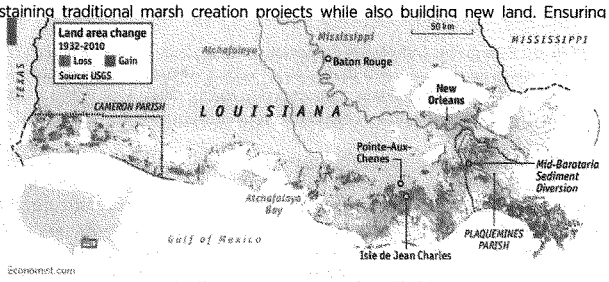
Funding Sources: Army Corps of Engineers, National Fish and Wildlife Foundation, National Resource Damages Act, the RESTORE Act, and more

Brown Pelicans in the Mississippi River Delta are among many species that will lose important habitat.

In January 2017, the Mid-Barataria Sediment Diversion was designated as a covered project under the Fast-41 Federal Permitting Dashboard, a public platform that tracks agency reviews and permitting for projects of national significance. Audubon and partners are working to expedite permitting for and approval of this project.

Project Benefits:

Since diversions reestablish natural deltaic processes and continuously build land over time, they provide long-term benefits that constructed marsh creation projects alone do not. Sediment diversions provide a regular supply of sediment and fresh water to wetlands, sustaining traditional marsh creation projects while also building new land. Ensuring wetlands throughout Barataria Basin would safeguard critical habitat for important birds and other wildlife, including several endangered species, resulting in higher biodiversity and productivity. Additionally, these new and sustained wetlands provide a buffer from storm surge for communities and industry.



Land loss area change in Louisiana from 1932-2010.

Photo Credit From top to bottom: Ned Haight Flickr CC (BY-NC-ND 2.0); economist.org

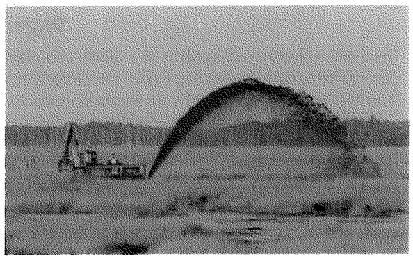
Audubon MARYLAND-DC

BLACKWATER CLIMATE ADAPTATION PROJECT

Blackwater National Wildlife Refuge lies at the core of the Southern Dorchester County Important Bird Area, whose marshes not only support a unique salt marsh bird community but also are essential to a local economy based on farming, fisheries, and tourism. However, nearly all of the tidal marsh here is predicted to disappear beneath rising seas by 2100. In the planning phase of the project, Audubon and partners combined the results of habitat management, research, sea level rise models and marshbird surveys to develop a suite of strategies for increasing marsh resilience to sea level rise, and to prioritize locations where their implementation is most feasible.

Timeline: January 2011 - December 2018
Location: Dorchester County, Maryland
Partners: The Conservation Fund, U.S. Fish and Wildlife, Sustainable Science LLC, U.S. Geological Survey, Maryland DNR
Costs: $3.5 million
Funding Sources: Town Creek Foundation, USFWS, Maryland DNR, National Fish and Wildlife Foundation (Hurricane Sandy Coastal resilience award to TCF), Wildlife Conservation Society, France-Merrick Foundation

Implementation projects to date include experimental tree removal to facilitate upslope migration of tidal marsh into salt-stressed forest and the application of 26,000 cubic yards of sediment dredged from the Blackwater River onto 40 acres of submerging marsh to raise the marsh elevation and reinvigorate marsh vegetation. A new project that began in 2017 will halt and reverse erosion in a marsh recently transitioned from uplands where ponded water in a collapsed basin is causing vegetation loss. By extending the head of a tidal creek into this basin we will relieve flooding, enhance tidal exchange, and revive marsh vegetation.



Dredged material getting deposited at Blackwater National Wildlife Refuge.

Project Benefits:

The goal of the Blackwater Climate Adaptation Project is to ensure the persistence of the tidal marsh ecosystem and its unique birds and other wildlife in the face of sea level rise. The benefits of preventing the loss of these marshes are enormous and relate to the local economy, quality of life, ecosystem health, and biodiversity. This area supports hundreds of people in small communities and could convert to open water by 2100. Dorchester County's 84,000 acres of tidal marsh act as a buffer for local communities against sea level rise and support countless nursery areas for hatchling fishes in their creeks. Blackwater refuge receives 200,000 visitors annually, over two-thirds of visitors to the county, who add millions of dollars to the County's economy. The marshes also act as a filter and a sink for nutrient pollution and help the Chesapeake Bay attain the nutrient reduction targets set in the 2014 Chesapeake Bay Agreement.

A Great Blue Heron in the Blackwater National Wildlife Refuge.

Dorchester County's marshes are home to 30,000 wintering waterfowl and a salt marsh bird community including species entirely dependent on this ecosystem, such as Saltmarsh Sparrow and the eastern Black Rail. Both of these species are in rapid decline and threatened with extinction within decades. If a core of high-quality marsh can be safeguarded there is hope for these species.

Photo Credits From bottom to top: Middleton Evans/Audubon Board Member; James O'Guinn/Flickr CC (BY 2.0)

Audubon NORTH CAROLINA

CURRITUCK SOUND MARSH RESTORATION

In 2010, the US Army Corps of Engineers completed a multi-year, multi-stakeholder study and found marsh and submerged aquatic vegetation (SAV) is disappearing, especially in mid-Currituck Sound. The study predicts 430 acres of marsh will disappear every 6 years. Marsh and SAV should be recovered to sustain the health of the estuary and provide natural buffers that reduce impacts of storms and flooding. Audubon and partners aim to construct terraces in the mid-Currituck marsh complex to break wave energy, reduce marsh loss, allow new marsh and SAV to become established, and provide a zone where marsh can be restored.

Timeline: Initial planning underway; construction phase depends on funding
Location: Mid-Currituck Sound between Duck and Corolla, North Carolina
Partners: Alliance for Currituck Sound partnership: Currituck County, USFWS, NERR, USACE, NCWRC, Chowan University, Sea Grant, TNC, Albemarle-Pamlico NEP, and more
Costs: $1 million
Funding Sources: Private foundations, and individuals

Project Benefits:

The marsh complex is designated as a global Important Bird Area for waterfowl and supports healthy populations of Osprey, marsh birds, herons and egrets. It is designated essential fish habitat by NOAA for species such as Bluefish and Summer Flounder, and supports significant populations of Striped Bass, Mullet, Blue Crabs, and White Perch. A study by the North Carolina Natural Heritage Program found the presence of several rare plant species in the marsh, and that Endangered Atlantic sturgeon and West Indian manatee frequent the marsh channels.

Essential ecosystem services of marshes and SAV are significantly diminished by the loss of these habitats. Tidal marshes and SAV provide nursery grounds for fisheries, food for wildlife, and export large amounts of detritus that forms the foundation of aquatic food webs. The loss of these habitats threatens fisheries and wildlife that are important to the lives, livelihoods, and economy of the Sound's residents and businesses. Marshes also provide buffering benefits that reduce the damaging impacts of storms and flooding, which are all-too frequent along North Carolina's coast.

A Green Heron at a marsh in Currituck Sound.

To preserve and enhance the societal and ecological benefits the marshes of Currituck Sound provide, Audubon created the Alliance for Currituck Sound, a multi-stakeholder group of agencies, NGO's and users (watermen, hunters, and recreational companies). Bordering the sound, Currituck and Dare counties depend on tourism for income, as tourism generates over $1 billion annually in this area. The natural wonders of the famed Outer Banks attract tourists, and while the beach is a dominant draw, more sound-side recreation is critical. These activities, combined with the Heritage uses of the sound - fishing, crabbing, and most especially waterfowl hunting - are the economic lifeblood of the community.

Audubon and members of the Alliance have already sought multi-millions of dollars in grants to restore and enhance the sound. These ecological infrastructure projects, such as the demonstration living shoreline project at the Donal C. O'Brien Audubon Sanctuary, will protect traditional jobs while creating new ones in coastal engineering and adaptation to sea level rise. Without these marshes, the culture, economy, and even the physical structure of the Outer Banks would literally wash away.

Photo Credit Christopher Elliot/Audubon Photography Awards

Audubon SOUTH CAROLINA

CRAB BANK SEABIRD SANCTUARY RESTORATION

Crab Bank is a narrow slice of sand in Charleston harbor that historically has supported up to 5,000 nesting birds in one season. It's one of just five Seabird Sanctuaries protected by the South Carolina Department of Natural Resources and is a designated Globally Important Bird Area by Audubon. But wind and waves have taken a toll on Crab Bank. Today, less than 100 birds can nest on this shrinking crescent of sand. Audubon and partners support the renourishment of Crab Bank using dredged material from Charleston Harbor, which would make the now 0.5 acre island a huge 80 acre island. It will cost the Army Corps of Engineers an estimated $3.5 million to create habitat from dredged material rather than dumping the sand out in the ocean.

Timeline: 2017 - 2019
Location: Charleston Harbor, Crab Bank Seabird Sanctuary, at the mouth of Shem Creek in Mt. Pleasant, Sout Carolina
Partners: Audubon South Carolina, Coastal Conservation League, South Carolina Aquarium, South Carolina Department of Natural Resources, Coastal Expeditions, South Carolina Wildlife Federation
Costs: $3.5 million
Potential Funders: US Army Corps of Engineers, South Carolina Port Authority, private funding

Project Benefits:

Crab Bank has diminished to a narrow slice of sand.

Crab Bank is protected during the nesting season from human disturbance. These islands are vital for the success of beach nesting seabirds and shorebirds, which include many species in decline. Data state that Crab Bank also serves as a secondary site for other established colonial sites subject to severe tidal overwash or human disturbance. In 2007, the island supported 15 breeding pairs of American Oystercatchers, 179 Black Skimmer nests, 615 Brown Pelican nests, 50 Gull-billed Tern nests, 1,212 Royal Tern nests, and 35 Sandwich Tern nests. These birds rely on safe places to recover and maintain healthy populations. With an increasing number of people moving to the coast, beach-nesting bird habitat faces more risks than ever. Maintaining Seabird Sanctuary islands should be paramount on the coast. Beneficial Use Project Alternative 1a would re-nourish Crab Bank and prevent vital bird habitat from disappearing. More sand on Crab Bank would restore bird habitat and put the dredged sand to use.

The added wave energy from larger container ships navigating Charleston Harbor also poses a potential problem to beach nesting birds. Added sand to Crab Bank would mitigate this problem and provide a base to create living shorelines, which can decrease erosion due to wave energy. Additionally, this project will help restore oyster reefs near the island. Oyster reefs provide microhabitat for small marine organisms and improve water quality for fisheries habitat. This island is a fantastic resource for people living and visiting Charleston and adds enormous aesthetic and economic value to Shem Creek and greater Charleston areas. Birds and other wildlife are what makes South Carolina such a beautiful place to live and visit, and has made South Carolina a successful area to do business.

Photo Credit Vanessa Kauffmann, acquired written consent

Audubon TEXAS

EROSION CONTROL AND RESTORATION ON CHESTER ISLAND

Timeline: October 2016 – ongoing
Location: Matagorda Bay near Port O'Connor, Texas
Partners: US Army Corps of Engineers
Costs: $5.1 million
Funding Sources: U.S. Army Corps of Engineers

In the 1960s, the U.S. Army Corps of Engineers (USACE) created a 200-acre island, called Chester Island (formerly known as Sundown Island) using dredged material from the Matagorda ship channel that Audubon now manages. This island is one of the largest bird sanctuaries on the Texas coast, providing nesting habitat for thousands of colonial waterbirds every year. The system is susceptible to severe erosion from high velocity currents from annual wind and storm events plus ship wakes from vessels coming in and out of Matagorda Ship Channel. From 1960 to 2017, the island lost 117 acres and even more after Hurricane Harvey devastated the island. High winds and storm surge from Hurricane Harvey caused harmful impacts including erosion that shifted the shoreline, the mortality of many birds, land loss of another 7 acres, wetland breaches leaving a strong flow in and out of the island, sediment loss leaving embankments up to 20 feet, substantial vegetation loss, and large amounts of trash deposited on Chester Island. Loss of nesting vegetation and ground nesting habitat devestated the amount of colonial waterbird species and their composition, which will likely impact future nesting seasons.

Beginning in 2007, Chester Island lost its source of supplemental dredge material due to USACE's decision to realign the Intercoastal Waterway. Since then, the island has lost close to 35 acres. In 2014, the USACE began working with Audubon to re-supplement the island. Helping to offset the continued erosion, restoration is an ongoing effort. In 2017, USCAE added 1 million cubic yards of beneficial use material to the coastline of the island. After Hurricane Harvey devastated the island, more dredge material is needed to mitigate the impacts of erosion and habitat loss. Audubon also plans to hire a contractor to move material within the island to provide more suitable bird habitat.

Project Benefits:

Chester Island is a vital part of Texas' coastal economy as it serves as one of the largest colonial waterbird nurseries on the Texas coast, helping to make Texas one of the leading ecotourism states on the Gulf. The Texas coast attracts birders and nature-lovers from all over the world bringing tourists to restaurants, hotels and recreational activities near the Central Coast and communities like Port O'Connor, Texas. Due to its distance from the mainland, birds have a safe sanctuary where predators are easily controlled and human disturbance is minimal. During the nesting season, Chester Island usually hosts 17,000-20,000 breeding pairs of 18 different bird species.

Chester Island was impacted by Hurricane Harvey causing severe cliff erosion and gathering of young Brown Pelicans.

Dallas, Houston and Austin were among the country's fastest growing cities in 2009. As Texas' population grows and coastal development increases, nesting oases become rare. Barrier islands are critical to ensure nesting bird species have a safe place to reproduce.

Rookery islands like Chester are an important part of a resilient bay system and serve as a great litmus test of overall bay health. Productive islands mean healthy and productive marine ecosystems and fisheries. Additionally, they are a part of our larger barrier island system. Barrier islands protect coastal communities because they are the first line of defense during threatening storms and absorb much of the wave energy that erodes private and public beachfront properties. Recent observations found that after the passage of hurricanes in 2005 and 2008, restored barrier islands weathered the storms much better than adjacent non-restored areas. While the restored portions maintained their sandy beaches, unrestored portions eroded back to a predominantly marsh shoreline.

Photo Credit Courtesy of Audubon Texas

Senate Committee on Environment and Public Works
Hearing entitled *"America's Water Infrastructure Needs and Challenges"*
January 10, 2018
Questions for Mr. Steve Cochran

Ranking Member Carper:

1. As you know, beach nourishment projects tend not to compete well overall in benefit cost ratio analysis when compared to larger projects, like ports. What other factors (such as economic benefits and revenues, return on investment and other value to the nation) should be considered in identifying project benefits so that important initiatives move ahead; and, how should the Corps prioritize projects?

Response of Mr. Steve Cochran

Regarding the analysis of project benefits:

Projects using natural infrastructure, such as beaches, dunes, and wetlands, would compete well if Congress required the U.S. Army Corps of Engineers (Corps) to fully account for project costs and benefits – including losses and gains in ecosystem services and full life-cycle costs – when calculating a project's benefit-cost ratio and establishing whether a project should qualify as the National Economic Development (NED) alternative.

Currently the Corps' benefit-cost analyses often: understate actual construction costs; fail to account for the costs of environmental damage (e.g., such as the loss of water filtration, groundwater recharge, and wildlife habitat from draining or destroying wetlands) and alterations to physical systems (e.g., like changes to longshore currents or wave refraction that increase erosion rates); and, the cost of shifting flood risks to other communities. Corps benefit analyses also present a flawed view of the value of the project because they include benefits from actions that are contrary to federal law, policy, and sound resource management (e.g., counting agriculture or development benefits created by draining wetlands); and, include flood damage reduction benefits for lands subject to flood or conservation easements.

These problems are particularly problematic given the inherent limitations with benefit-cost analyses. The National Research Council has concluded that benefit-cost analysis is not appropriate "as a precise decision rule" because such analyses contain "significant uncertainties," cannot address "important equity considerations," and cannot measure "all relevant costs and benefits (*e.g.*, biodiversity, ethical issues)."[1] Modernizing the Corps' benefit-cost analysis to ensure that they more fully account for project costs and exclude benefits from activities that are contrary to law and sound resource management would help ensure that Congress and the public understand the true costs and benefits of proposed projects. Such a proper accounting would also help avoid creating damage that will have to be corrected in the future through additional taxpayer funded expenditures, whether through Corps projects (e.g., Everglades Restoration,

[1] National Research Council, Analytical methods and Approaches for Water Resources Project Planning, 2004 at 43.

Coastal Louisiana Restoration) or other federal or state programs, and better inform how projects are prioritized.

Regarding project prioritization:

In addition to modernizing the benefit-cost analysis per the recommendations above, the Corps should also establish planning criteria that prioritize the use of natural infrastructure approaches, including for flood and storm damage reduction projects provided such approaches can offer an appropriate level of protection or incremental added value. This will help ensure prioritization of projects that provide multiple benefits to communities.

It is important that we maintain the current practice of excluding ecosystem restoration projects from the benefit-cost analysis requirements. However, in cases where ecological restoration projects also provide meaningful flood and storm damage protection benefits, such should increase a project's competitiveness or priority level.

For example, in coastal Louisiana large-scale restoration efforts like sediment diversions and marsh creation projects do not only restore robust coastal habitats for the benefits of wildlife and human recreation. These efforts create important buffers that shield communities facing a land loss crisis unparalleled in our nation, with one football field of land lost every 100 minutes. In addition to the obvious and very real ecological value, these restoration projects protect nationally-significant infrastructure and industries. Not only is it home to more than two million people, but coastal Louisiana supplies 90 percent of the nation's outer continental oil and gas, 20 percent of the nation's annual waterborne commerce, 26 percent of continental U.S. commercial fisheries landings by weight, and winter habitat for five million migratory waterfowl. The particular importance of restoration investments to this broad and vitally important array of economic, social, and natural assets should be – but is not – fully incorporated into the project prioritization process.

In summary, in order to more successfully prioritize projects, the Corps must 1) refine its ability to accurately represent the true costs and benefits of projects, including the costs of environmental harm incurred and 2) better account for the multiple benefits of natural infrastructure approaches, and prioritize such approaches in their work.

Senator BARRASSO. Thank you very much for your testimony.

We appreciate all of you being here. We are now going to move on to a series of questions from members.

I will start with you, Ms. Ufner. Many stakeholders who work with the Corps of Engineers have commented and maybe complained a little bit about the process that it follows to get from identifying a water resources problem to implementing a solution, and that there can be long and costly delays. For example, in the arid west, there are many water supply challenges that have not yet been solved, such as removing sediment from reservoirs, to providing more water supply capacity and effectively managing multiple water supply needs, such as flood risk management, drinking water, irrigation, all from a single reservoir.

So as a result, the water supply is becoming scarce and more expensive. Could you please share any thoughts you might have as to how to improve the Corps' processes, so that the water resource projects are operated more efficiently?

Ms. UFNER. Thank you, Senator. We actually have a number of suggestions, but in the interest of time, I am going to limit it to two. First, improve the intergovernmental collaboration between the Corps and local governments. The Corps has a lot of technical assistance that is very valuable to local governments. But the processes and permits they have often prohibit or slow down projects from moving forward.

Second, Congress may want to consider requiring the Corps to do a regulatory efficiency assessment of Corps processes, and have the Corps submit to Congress the results of this with potential alternatives on how they are going to address it. Thank you.

Senator BARRASSO. You said you were just going to share two. If there are some additional ones you would like to add in writing, we would be happy to receive those.

Ms. UFNER. We would be happy to do so.

Senator BARRASSO. Thank you.

Mr. Robinson, as well as Mr. Friedman, ports and inland waterways are very important to the lifeblood of the American economy and our economic activity. Every year, over a trillion dollars' worth of goods moves through the ports and inland waters, and to every basic corner of the United States and around the world. Can you talk a little bit more about the importance of ports and inland waterways and how their management impacts your ability to transport goods, allowing us to keep jobs at home and help us to more effectively compete globally?

Mr. ROBINSON. Senator Barrasso, just speaking on behalf of the NKARNS, from Tulsa, Oklahoma, to Muscogee, just in that segment of the waterway, 53 miles, there are more than 8,000 jobs, there has been $5 million invested. Annual payrolls to the counties and to the cities are $320 million annually.

In Muscogee, which is a community of 39,000 people, most of the manufacturers in that community—and Muscogee is a manufacturing town—depend on the waterway. So they depend on the reliability of the waterway. They depend on the transportation cost savings for delivering and receiving goods on the waterway. It is critically important to the economy of rural America. We are not

investing in the system like we should be. Therefore, we are encountering delays, and it is not a good situation in rural America.

Senator BARRASSO. Mr. Friedman, would you like to add?

Mr. FRIEDMAN. Yes, thank you for the question, Senator Barrasso. I will address that from the perspective of the Great Lakes and the St. Lawrence Seaway, which is a unique waterway system, where we are all interconnected as ports, and we trade with one another, both within the system domestically. There is also of course the international waterway, St. Lawrence Seaway, where we connect to all parts of the globe.

The partnership that we have with the Army Corps under WRDA to keep our harbors fully dredged is a critical lifeline for big cities like Cleveland, Detroit, Chicago, as well as a number of rural communities. It is critical for agriculture, for heavy manufacturing, for steel making, which takes place in Cleveland, based on iron ore, which comes down from Minnesota. That is one of the primary examples of the types of trade in our region.

Then we have many cargoes that flow in and out of the heartland through the St. Lawrence Seaway, both exports from American manufacturers and imports like specialty steel that we rely on in the appliance manufacturing sector and other manufacturing sectors. So I think in total, the number for the entire system is something like on the order of 227,000 jobs, both on the U.S. and Canadian side of the Seaway and the Great Lakes. So making sure that we continue to get WRDA right, streamline the process, authorize new projects, and get to full use and full spend of the Harbor Maintenance Tax is a critical priority for us. Thank you.

Senator BARRASSO. Thank you.

Senator Carper.

Senator CARPER. Thanks, Mr. Chairman.

I will start out with Nicole Carter.

Let me say, excellent testimony; very helpful. A question for you. Given our current operating environment, with recently passed tax reform which reduces revenues over the next 10 years by about $2 trillion, the state of our crumbling infrastructure with a grade of D, and we are talking about the kind of situation we face here with our ports, our rivers, and so forth, it is just as bad with respect to roads, highways, and bridges.

Complete with limited numbers of Chief's reports and a large backlog of Corps projects, what are the big issues that we should tackle on the next Water Resources Development Act?

Ms. CARTER. Thank you for the question. In WRDA 2014 Congress established new ways for non-Federal entities to be involved in projects. This has resulted in additional projects being led by non-Federal entities, and trying to understand how well are those projects and processes working for those non-Federal entities, as well as delivering on projects would be part of the process to understand how to incorporate Corps projects into a larger investment package.

Basically right now that process consists of the non-Federal entities often providing the funds up front, and essentially signing an agreement that upon the availability of appropriations, they may receive some reimbursements. GAO recently did a study that identified that there are about $4 billion in projects like this in the

country, and about $400 million has been reimbursed. But we don't know the total amount that requires to be reimbursed.

How well those are working, well, [indiscernible] how well other non-Federal entities in the future want to make those investments and what they can expect in the way of the Federal Government partnering in those investments if they do choose to lead rather than wait for the Corps.

Senator CARPER. Thank you very much.

I will turn next to Mr. Friedman. Thank you very much.

Does the Cuyahoga River still catch on fire?

[Laughter.]

Mr. FRIEDMAN. No, sir. We are coming up on the 50th anniversary of that infamous fire, Senator Carper. I am happy to report that the environmental health of the river has been restored significantly. We are proud of what we have been able to achieve since that dark day.

Senator CARPER. I was a student at Ohio State University about that time. We used to talk about fish fries up on the Cuyahoga River.

[Laughter.]

Senator CARPER. The wrong kind. Question for you, if I could. By 2020 the total volume of cargo shipped by water is expected to more than double by what it was just 17 years ago in 2001. As ships continue to get bigger, we see more congestion at the docks, longer ships required, deeper navigation channels, as we know, which only a few U.S. ports currently have.

How do we ensure that ports are able to effectively distribute and receive goods as ships continue to grow in size? Is it a policy, funding? Is it policy issues, or funding issues, or both? If it is a funding issue, how do we go about doing more with less?

Mr. FRIEDMAN. Thank you for the question, Senator. I will try to address that. Yes, it is certainly a funding issue and a policy issue, both. As you heard me say earlier, AAPA is asking for $66 billion over the next 10 years to address many of those issues that you just spoke to, deepening waterside projects, such as deepening in order to keep up with the ships that are, of course, enormous today, as well as some landside projects to ensure that we have the intermodal connections, so once that cargo comes off that ship at a port, or moves onto that ship, it can get to that port efficiently from an inland point.

So we absolutely need a Federal partnership. I would also point out that there is already what I would call a robust public-private partnership in place, because our port authorities work very closely with private sector port terminal operators and ship owners who invest heavily in our ports in partnership with our ports and the Federal Government. The Federal dollars will leverage additional private investment and go toward those sorts of infrastructure projects, which there is no direct pay back on.

So we look forward through this next round of WRDA, and in this infrastructure discussion we will be having this year to ensuring that we can put a plan in place to fund those important needs at our ports.

Senator CARPER. In my opening statement, I mentioned that the Corps faces a rather sizable math problem, as it tries to serve

roughly a $200 billion requirement, and more with an annual budget that hovers around $4.6 billion. Think about that. Think about that, a $200 billion requirement to meet and an annual budget that hovers around $4.6 billion. We are just, we know it costs a lot of money. We know how economically important it is in our country. We are just not spending the money; we are not investing the money. We can do streamlining from now until the cows come home. We have done a lot of smart streamlining. I think we are prepared to do some more.

There is good news, and good opportunity to figure out how to leverage Federal resources, State resources to bring in private sector resources. We are doing that right now with an extension of the Port of Wilmington.

But at the end of the day, one of the things we need is for the Federal Government to do its share, to do its part. That is not something that requires a response from any of you. I think that is the 800 pound gorilla in the room. Thank you.

Senator BARRASSO. Senator Inhofe.

Senator INHOFE. I think Senator Carper brought out something that is significant and that is very unique, and that is that in this area, where we are trying to bring in private sector funding, we actually had to pass a bill and a provision into law to allow that to take place. I can't think of any place else in government where you have to ask permission to let the private sector pay for something. So that was something that was good.

Mr. Robinson, I again appreciate your being here so we can make it very visible to people that we have problems on this inland waterway. I can remember back when I first came to Congress, I would go up through some of the eastern States and see the problems they have had with their old ports, thinking, well, we are pretty fortunate in Oklahoma; we don't have those problems. Well, now we do have those problems. Enough years have gone by, we have outlived the lives of some of our ports. So we have to address that.

We had a Subcommittee that I chaired not long ago on transportation and infrastructure. Someone suggested that the cost share of the Inland Waterway Trust Fund should be changed in some way. One suggestion was from, to 15 percent from the trust fund and 85 percent from the general fund. Are you familiar with that suggestion?

Mr. ROBINSON. Yes, Senator Inhofe, I am, and I think there probably needs to be an adjustment. The problem, as Senator Carper acknowledged, is not doing more with less. We have been trying to do that forever. It is not working. We need to do more with more and do it efficiently and in a businesslike manner.

Senator INHOFE. Those of us who have been down there and observed the problems that we have in some of these relatively new ports through where we carry our goods and services, our nation's system directly touches 38 States, as has been brought out. It is not just the coast. Three of our ports go through Senator Boozman's State, then two more ports are in Oklahoma.

Now, in the FAST Act, for the first time, and I have been through all seven of them since 1987, that we were able to have

a freight provision. That freight provision left a lot of the authority up to the States as to how to expend that and so forth.

So I would ask the question, would allowing the States to use FAST Act freight funds on our waterways, if they chose to do it, would that be a valuable tool to address the issues and the needs in the States?

Mr. ROBINSON. I think so, Senator Inhofe. I think we need more tools, and that would be one of them. The question, of course, would be whether States who are so focused on their highways' needs, roads and bridges, how much effort or how much expenditure they would allow from those funds for waterways.

The other question is, what would they use those funds for? Would they use it to cost share new projects? If that were the case, I think there is a real need to cost share new projects. There is not enough money in the Inland Waterways Trust Fund to do that. Perhaps the States are going to have to pick up a little bit of the load there.

Senator INHOFE. It is not going to happen unless somebody does something. You have to get aggressive and come in with the State, decide what the alternatives are and then what percentage perhaps might be appropriate for that. I look at sources, and I run out of ideas. So anyway, I think that is something we can do, and something that doesn't affect us as much here in the Federal Government as much as it does in State government.

Mr. ROBINSON. I also think, Senator Inhofe, the Water Infrastructure Financing Act that the Congress authorized in 2014 is another tool that could be used. It is leveraged, because the Federal Government is getting the money back, it is a loan. So I think that is another one of the tools at our disposal, like the TIGER program.

Senator INHOFE. There is a variety. We can get together and decide what we want to do on a State level.

Ms. Ufner, the counties and cities are facing a lot of issues when it comes to water resources, in trying to address these. I know other States, not just the State of Oklahoma, have some of these problems. In the city of Bartlesville, Oklahoma, the community is growing and in need of additional water storage. Now, we had water storage from one lake in that city. As a result, it increased our rates to the customers by over 100 percent.

But when we tried to open up another one, and I am not sure you are familiar with this particular issue, but we went to the Corps of Engineers, and they increased—they had a rate increase of 3,000 percent, which obviously our cities, that particular city of Bartlesville, was not able to do anything. When I asked the GAO to investigate how the Corps comes up with their prices, they reported back that they couldn't, because the agency's recordkeeping was so bad and varied they could not actually study how the agency arrives at their numbers. That is shocking.

Ms. UFNER. I almost feel like that is a trick question, Senator. [Laughter.]

Senator INHOFE. No, it is not a trick question; it is a serious question, and I would like you to talk about it. Because we have new people coming in, and we have had a hearing already with the Civil Division of the Corps of Engineers. They recognize that

changes have to be made. But not if we all sit around and keep quiet and don't talk about it.

Ms. UFNER. I think that you hit a strong point on the head. There is a lot of information that is not available out there. It is something that we need to figure out and work together to do it.

Senator INHOFE. Yes, well, my time is expired, but that is something we need to address.

Thank you, Mr. Chairman.

Senator BARRASSO. Thank you, Senator Inhofe.

Senator Whitehouse.

Senator WHITEHOUSE. Thank you, Chairman. I appreciate the panel being here. Particular welcome to Mr. Friedman.

Rhode Island has two ports that we are investing in and proud of, ProvPort and Quonset. We are the home of Moran Shipping Agencies, which is one of the world's best ship servicing agencies. So we are keenly interested in ports.

I am interested in your take on what sea level rise infrastructure impacts our ports are looking at.

Mr. FRIEDMAN. I think our ports are keenly interested and concerned about sea level rise and what they can do in partnership with local, State, and Federal governments to enhance resiliency, as we heard Mr. Cochran speaking to earlier. I think we would look toward this WRDA bill to increase our ability to work in innovative ways with the Army Corps of Engineers.

I think you usually find that a lot of the new and interesting ideas tend to bubble up from those of us who are on the ground at our local ports and communities. We need the ability to sit down with our Army Corps districts and work together on those solutions. We are engaged in those discussions with the Buffalo District of the Corps, which oversees Cleveland. Believe it or not, we have had some coastal resiliency issues in Cleveland. SuperStorm Sandy did a tremendous amount of damage to our breakwater and other structures in our port. We are looking at dredge material, for example, to fortify our port.

Senator WHITEHOUSE. Is it fair to say that the concern of America's ports about sea level rise goes beyond the actual seashore itself, that you can raise piers and sea walls and so forth. But if the sea is infiltrating through, for instance, water systems and bubbling up behind, if it is flooding access roads that are necessary to get goods in and out of the ports, those are matters that are of equal concern to the actual shoreline itself; is that correct?

Mr. FREIDMAN. No question, Senator. I think our ports are literally on the front lines of this issue, and they are very concerned about the upland impacts of sea level rise as well as being inundated right on the docks. There is no question that all our ports are focused on that question. I think they are all working very hard to figure out how do we mitigate going forward.

Senator WHITEHOUSE. Ms. Ufner, you are here on behalf of all counties, but if I could direct your attention to coastal counties, could you tell us what you are hearing from coastal counties about the infrastructure hazards and risks and problems and challenges that they are seeing related to sea level rise and storm surges and so forth?

Ms. UFNER. It is much broader even than sea level rise and storm surges. We are definitely getting the flooding in the coastal counties. I also work very closely with our Gulf States Counties and Parishes Caucus, and especially with the hurricanes that have come through this past fall, they are increasingly focusing on how to address those issues. Because the weather events have been getting more severe, and the population growth within those communities makes it even more essential that the communities can address these issues at the local level.

Senator WHITEHOUSE. So my view on this is that this is a problem that coastal communities face, counties and municipalities. That very often those counties and those municipalities don't have a lot of resources to do the planning.

I see your head nodding, for the record, yes. Good.

It is also my view that a lot of the FEMA mapping has proven itself to be wildly inaccurate. So you have counties that are counting on the Federal Government for planning as to what sea level rise and flood risk looks like, and they are being given bad information, which puts it again back on the community to try to reach its own better planning process. But without the resources it is really hard to ask a local community to take on a task like that. Is that a fair description of the problem as you see it as well?

Ms. UFNER. It is. Counties derive a large part of their income from property taxes, and States set the limit of how we can even raise property taxes. So it sets an ugly cycle of how do we fund for something, how do we strengthen our local communities. And that is why the Federal-State partnership is so valuable to us.

Senator WHITEHOUSE. Yes.

Well, let me just make one point to my colleagues. I think that as we are beginning to address these WRDA issues, one of the areas in which we can become more efficient and more helpful to the Army Corps would be to try to find a good, honorable, and transparent way for Congress and this Committee to be able to assert its own priorities in the process.

It concerns me that we shovel projects in one side of the WRDA bill and we shovel money in the other side of the WRDA bill, and how the Army Corps of Engineers connect that money to those projects is a giant black hole. I think we need to fix that. I know we have been through a problem of earmarks that received a lot of justified criticism. Our response was to abandon this responsibility entirely. I think that was an overreaction, and that we can and should in this Committee try to frame out an honorable, transparent, proper way for these priorities to be met under our supervision, rather than just throw it off to the Army Corps bureaucracy. I hope that statement was not unwelcome, and I appreciate that time.

Senator BARRASSO. It was very welcome. Thank you very much, Senator Whitehouse.

Senator Wicker.

Senator WICKER. Thank you.

Mr. Friedman, let's talk about the Harbor Maintenance Trust. I notice in your testimony you advocate full use of HMT revenues over a 10 year period. What we have been doing, as has been pointed out, is we have been taking in more HMT revenue and sort of

setting it aside, making the deficit look better by not spending it for its intended purpose.

If we take your recommendation and restore—and restore over a 10 year period the full use of these revenues, will that get us where we need to be in terms of meeting our funding needs?

Mr. FRIEDMAN. Thank you, Senator Wicker. It gets us part of the way there, but not all of the way there. If you look at the numbers that AAPA has submitted in the infographic, and they can provide more detail, we are calling for full spend every year of the revenues that are brought into the trust fund, and spending the roughly $9 billion surplus that has been built up, as you just mentioned. Then on top of that, we would need additional moneys through an infrastructure bill to reach the $66 billion, which we identify as the full need.

So we would certainly be fully maintaining our harbors at that point, if we fully spend the Harbor Maintenance Trust Fund, catching up with the backlog if we use the surplus. And then for some additional waterside improvements, such as deepening, which was mentioned earlier, some of our largest harbors for the larger ships, some of the big container ports, then some critical landside multimodal connections, using infrastructure dollars, we think that gets us to where we need to be as a nation.

Senator WICKER. OK, so it is your hope that the President's infrastructure plan, which should be outlined to us and to the public within a couple of weeks, or at least within a month, that that $1 trillion infrastructure plan will be the third step in getting us where we need to be to meet our needs?

Mr. FRIEDMAN. We hope so, Senator, yes.

Senator WICKER. OK, and I hope so, too.

Thank you for this chart and these graphics. Senator Carper showed a bigger copy of this. They are illustrative examples of port related investment needs. I notice you have three rail projects, one being the Mississippi Rail Relocation Marine Terminal Project at Pascagoula, Mississippi. That is the only city in the United States that rhymes with hallelujah; you might tuck that away as a fact to be learned today.

[Laughter.]

Senator WICKER. Also, Cross Harbor Rail Tunnel in New Jersey and Port Arthur Rail Project. How are we doing in rail access to ports? And why aren't we where we need to be? What have been some of the challenges in getting that rail to the ports?

Mr. FRIEDMAN. I think we have made good progress in the last 20 or 30 years or so in improving rail access to ports. Intermodality, or the whole concept of putting a container onto a train, is not that old a concept. So many of our ports had to be retrofitted with the kinds of rail connections that would be functional for them.

The granddaddy of all those would be the Alameda Corridor project in southern California, which consolidated all the rail lines in a cut, so as to eliminate grade crossings. We have seen those sorts of projects on somewhat smaller scale at many of our ports. That has been, I think, a good public-private partnership between the railroad industry and between ports themselves, between the Federal Government.

But we do need more. We are seeing increased volumes to and from our ports. I think it is particularly important for exports. We tend to think about containers coming in through our ports. But where I am in Cleveland, we think a lot about exports. We need those strong rail connections from the hinterland into the ports in order to move exports, which quite often are heavy and bulky products that we make here in the U.S.

That is why, in that $66 billion, we have included those critical rail connections. In some cases it is tunnel clearances; in some cases, it is rail bridges; in some cases it is grade crossings, it is more track in order to manage those trains as they move in and out of the ports. Thank you.

Senator WICKER. Quickly, Mr. Cochran. This loss of land in Louisiana is something I am more than familiar with, as a next door neighbor. Truth of the matter is, I am not advocating doing away with flood control, but it is actually flood control over the centuries and decades that has caused the absence of sediment and the loss of land, is that correct?

Mr. COCHRAN. One of the significant factors, yes, sir.

Senator WICKER. Just the point I would make is, no one would advocate the solution to the problem is to go back to the wild days that we used to have that caused the sediment. I appreciate you and your testimony by thinking of different ways, innovative ways to address them and that we can't change back to the way it used to be. I appreciate that.

Also let me just say, I understand you that we are all for streamlining permitting. You have some doubts about some of the suggestions at the other end of the table. We are going to have to come together across the aisle on ways that we can streamline the permitting processes. I am glad to see a consensus among all five of our witnesses, I believe, that we need to address that. I hope we can work on the nuances that can be a happy solution and a win-win for all parties.

Mr. COCHRAN. I would offer, and I appreciate that. The key there is what you identified, which is sitting down together, sitting down together on the things that we have been lucky enough, and maybe threatened enough in Louisiana to do, is to recognize that hurricanes and other things are completely non-partisan. We need to be, too, as we figure this out. So looking at how to make the system work better, how to make underlying protections do what they are intended to do, but to do so in the most efficient way, that is a great conversation to have.

Senator WICKER. Thank you.

Senator BARRASSO. Thank you, Senator Wicker.

Senator Gillibrand.

Senator GILLIBRAND. Thank you, Mr. Chairman, Mr. Ranking Member. I am very grateful for your holding this hearing. It is important work that our Committee does, to draft the new Water Resources Development Act this year.

My State of New York has a wide range of diverse water infrastructure needs and challenges. We are a coastal State threatened by the impacts of climate change, coastal storms and sea level rise. We are also a Great Lakes State, constantly challenged by aquatic invasive species like Asian carp, that have the potential to destroy

our fisheries if they are not stopped from gaining a foothold in the Great Lakes Basin.

We have the largest and busiest port on the east coast, which is essential to international commerce. And we have a number of small ports and harbors across our State that are important to the local economies and need to be properly maintained.

We cannot address all of these challenges without a strong investment in the Army Corps. But funding is only a part of it. We need to ensure that we are investing our Federal dollars so that we are more resilient in the face of these challenges.

I was very disappointed that the Trump administration chose to rescind the Flood Risk Management Standard implemented by the Obama administration, which required federally funded projects to incorporate best available and actionable science on climate change and sea level rise and build above the base floor elevation levels. If we are spending, as we are in the northeast, billions of dollars to build the infrastructure to protect our communities, it defies logic that we would leave taxpayers exposed to the types of catastrophic losses we saw after SuperStorm Sandy, and more recently hurricanes Harvey, Irma, and Maria, but not building to withstand the current and future flood risk.

So to Ms. Ufner, what are the consequences to counties and local governments and their taxpayers if we fail to properly assess risks, both current and future, when planning to build in flood plains?

Ms. UFNER. Thank you, Senator, for your question. Ultimately, counties are responsible for the public health and safety of our communities. Probably, if you look at what has happened in Santa Barbara County, California, within the last day, with the flooding that is due to the wildfires, there are only limited things you can do after a wildfire to address risk. But it demonstrates that when floods happen, people die, homes disappear, roads are gone, memories are gone. This is something that local governments want to prevent, and they want to be there to help with their residents.

Senator GILLIBRAND. Are we doing enough to ensure that we are adequately protecting ourselves and our assets from future storms and floods? What could we be doing better?

Ms. UFNER. It is a combination approach. There is a responsibility on the local governments. A lot of our local governments, though, they have the limited income and technical assistance to follow through with these projects. And that is where they really look to the Army Corps of Engineers and other Federal agencies to bring the technical assistance, the data, the modeling, the communities can use. We have been working with our counties on best practices that they can use in their own communities to build their resilience at the local level.

Senator GILLIBRAND. What else could we be doing?

Ms. UFNER. We just keep on going in the direction we are going. The way NACo views it is that these are steps on the ladder that we can help the communities that are out there, really being aggressive. There are trend setters. They are the ones we learn from on what may work in other communities.

Senator GILLIBRAND. Thank you.

To Mr. Cochran, what needs to change in terms of Army Corps policies and procedures to allow for greater use of nature based solutions to mitigate flood risks along our coastlines?

Mr. COCHRAN. One of the things that I want to point out is that this multiple lines of defense system chart that we used earlier to illustrate the integration of hardened infrastructure and natural infrastructure is actually based on a chart that the Corps put together following in its post-Sandy efforts, as it did a comprehensive coastal study in the northeast. So I take that as both a positive sign that—too often what we do is learn about these things after the fact. This is a post-Sandy study, not a pre-Sandy study.

So I think one of the things we really need to encourage within the Corps is to take the learnings that have occurred in these post-Sandy situations and really make sure that they penetrate across the Corps, across the various divisions, not just single in on one place, so all the areas, coastal and inland, can get the clear benefit of this kind of thinking, this kind of an approach. Because from that comes actual information and data, so that you can actually do the kinds of comparisons that let you select the things that will work best, not just take one old system because that is the way we have always done it, but actually integrate these things so that they become not only protected but sustainable in the process.

Senator GILLIBRAND. Thank you, Mr. Chairman.

Senator BARRASSO. Thank you, Senator Gillibrand.

Senator Ernst.

Senator ERNST. Yes, thank you, Mr. Chair.

A number of my coastal colleagues have mentioned the detriment from hurricanes and so forth. I would offer them the opportunity to come inland a little bit. Iowa has about 1,000 miles of coastal setback in either direction. But regardless of those large scale effects that come from hurricanes, we do have flooding issues in Iowa that occur on a much more regular basis than those 100 year floods or 500 year floods that are recorded out there.

Senator Whitehouse mentioned that black hole that exists within the Army Corps of Engineers. We get the projects in on one side, and as he said, the funding in from the other side. I tend to agree with the Senator, in that there is a black hole and we need greater transparency there.

Part of that black hole, I feel, is the benefit to cost ratio. Mr. Cochran, in your testimony, you encourage Congress to direct the Corps to modernize that BCR, the benefit to cost ratio analyses, because you believe the estimated costs are often inaccurate. A priority of mine has also been to modernize the BCR metrics, so that more communities, particularly our rural ones, have an opportunity to get their projects funded.

We have a flood mitigation project in Cedar Rapids, Iowa, that was authorized by WRDA in 2014. It was mentioned for prioritization in WRDA in 2016, but has not received any funding due to the low BCR that results from Iowa's relatively low property values. I know that is true in other areas as well, and maybe Mr. Cochran in Louisiana, too, because your property values are low also.

Do you have any thoughts on how the BCR metrics could be modified so that projects like this flood mitigation project in Cedar Rapids have a better chance of receiving funding?

Mr. COCHRAN. One of the recommendations that we have is really a focus on making sure that you can in fact take account for the range of benefits that can come from projects when you are doing protection. A lot of that has to do often with the benefits of wetlands, the benefits of setbacks, things like that that you are used to in your riverine situation that really don't get accounted for any benefits when you get into the cost-benefit. It is just, well, there is some land there, but they don't actually look at the benefits associated with it, this kind of benefits.

So a true accounting for the benefits from natural infrastructure, for the benefits that are there, really needs to be done. It will end up benefiting these discussions in a lot of the ways that you are talking about because it actually gives a true picture, not just one that is just slanted toward and old way of doing things.

Part of the challenge that I think a lot of people have had with these analyses, too, is a real lack of transparency. It is difficult understanding exactly where the numbers came from or how they got there, and no real requirement that they be justified in a way that allows people to actually engage in that conversation. So we think that that transparency is a fundamental piece of this. Data transparency, real accounting for real benefits, those things together really can make a difference.

Senator ERNST. That is too true. Again, going back to that black hole that Senator Whitehouse was referencing. So thank you. I think that is important, and I hope we are taking a look at the BCR as we move forward.

And of course, Ms. Carter, the Army Corps component of the WIFIA program that was established by WRDA in 2014 has yet to get off the ground. That is the Army Corps portion. The EPA has already implemented their portion.

What are some of the challenges that the Corps is facing in implementing this program? And at this current pace, how long will it take for the Corps to catch up to where EPA is?

Ms. CARTER. Thank you for the question. Indeed, the WIFIA program for the Corps has not been funded. And part of what has been going on is that the Corps has no real history with a loan or loan guaranty program, so developing the guidelines. And then understanding how will those projects be scored in terms of the risks to the Government have been some of the primary challenges.

Basically, as those issues get worked through, with either congressional or Administration involved in those discussions of how to score the risk, as those progress, then funding could be provided and the Corps could start providing these loans and loan guarantees, which could assist with projects like flood levees where communities could potentially proceed on their own to be able to perform those projects.

So those are the main ones, the ability to understand the scoring of it.

Senator ERNST. Would it be helpful, since EPA already has an established process, would it be helpful then if the Corps could de-

termine those projects and then fund those through WIFIA and EPA?

Ms. CARTER. I have not looked at that as an option. But I believe there is some legislation that is out there to that effect. We have a CRS expert that covers the WIFIA program, and any questions for the record that you would like to provide for us, we are happy to answer.

Senator ERNST. I appreciate it; thank you very much.

Thank you, Mr. Chair.

Senator BARRASSO. Thank you, Senator Ernst.

Senator Boozman.

Senator BOOZMAN. Thank you, Mr. Chairman.

I don't have a question for you, Ms. Carter, but we do appreciate CRS, we appreciate all of your knowledge and just CRS in general. You all do a great job and probably are not thanked enough by us as we try and get things together. Give yourself a big pat on the back.

Ms. CARTER. Those types of comments are what keep us going. Thank you.

Senator BOOZMAN. We do appreciate you.

Mr. Robinson, to capitalize on America's changing economy, it is clear that necessary infrastructure improvements must be made to our inland waterways and ports. Arkansas and Oklahoma have been working for years to deepen the McClellan-Kerr Arkansas River Navigation System so barges and boats can carry larger loads. I think about 40 percent greater loads. So it is very, very significant.

Senator Inhofe and I both understand, and certainly we appreciate his leadership, but also the national significance of a 12 foot channel versus what we have now. We are going to work really hard in WRDA 2018 to try and get that accomplished.

Can you explain why the 12 foot channel would be a benefit? Not just for Arkansas and Oklahoma but for the country as a whole.

Mr. ROBINSON. As you said, Senator Boozman—well, let me give you an example. You know Scott McGeorge with Pine Bluff Sand and Gravel, operating a rock quarry there in the Pine Bluff area. The closest rock quarry to New Orleans in the country. So Scott McGeorge and Pine Bluff Sand and Gravel were not able to compete when New Orleans needed rock desperately. So as a nation, we paid more for that rock than we otherwise would have, because we weren't willing to deepen the channel. Or we started the channel, but we didn't complete it, we didn't go forward with it.

Senator BOOZMAN. Along that line, I have great concern in the sense that as recently as 2016 Bob Portis expressed concern that the critical backlog on the NKARNS was of that nature. That number is now ballooned to $143 million in less than 2 years. If we can continue to kick the can down the road and not address the critical backlog, talk about that. Talk about the effect of it, if we actually had to shut the system down, again, not only for Arkansas and Oklahoma, but for the rest of the country.

Also, according to the U.S. Army Corps of Engineers, 58 percent of locks and dams are past their 50 year life expectancy. Talk about, if we could do some more things, the positive effect.

Mr. ROBINSON. The locks and dams on the NKARNS are 47 years old. I realize that the locks and dams on the rest of the system and in the nation are older than that. One of the reasons that the backlog of critical maintenance is growing at such an alarming rate is because we are nearing the end of the 50 year life that most projects like that have from an engineering standpoint. So we are discovering new things every time we de-water a lock, and we do that quite often in order to make sure that we are keeping up with the maintenance that needs to be done.

Unfortunately, the funds aren't available to do the maintenance, even when we know they need to be done. If NKARNS were shut down as a result of failure of the system in one way or another, we have calculated that the cost in Oklahoma would be $2 million a day. That is a significant cost to shippers, to ports and terminal operators, and to the nation. It is just not a good way to do business.

These projects were justified on expectations that the benefits would exceed the cost. They have done that. There is significant earnings to the Federal Government to go into the Treasury. It is not a matter of not enough benefits and revenues. It is a matter of using those revenues for other purposes.

Senator BOOZMAN. Mr. Friedman, a top priority for the Chairman and Ranking Member, for the entire Committee, is passing a WRDA bill. We went through a period from 2007 to 2014 where we had a gap. In 2014, 2016, we have gotten back on track. Can you talk about what it means to have certainty with having a WRDA bill every 2 years to address these problems?

Mr. FRIEDMAN. Sure, thank you, Senator. Yes, it is critically important for the port industry, American industry to have a WRDA reauthorized every 2 years, or on a regular cycle. Because adjustments need to be made to the new construction start authorizations as projects are designed and then being built that, as we know, the Army Corps has been plagued with projects that string out for many, many years, adding costs.

It hurts the competitiveness of the nation if we can't complete these harbor improvement projects, complete these deepenings. A gap of 7 years, as you mentioned, is very, very harmful.

It also gives us an opportunity to address the issue that was brought up in terms of transparency and opening up the decision-making process at the Corps, the so called black box which we think would be good for all stakeholders to be able to have input, to modernize the benefit cost ratio, to make sure we are funding the best projects for the nation. So AAPA is strongly in favor of getting back to the regular order on WRDA.

Senator BOOZMAN. Thank you, Mr. Chairman.

Senator BARRASSO. Thank you, Senator Boozman.

Senator Carper.

Senator CARPER. Thank you, Mr. Chairman.

A question again for you, Ms. Ufner, dealing with stakeholder involvement. The ground rule is that stakeholder and project sponsor, in collaboration with the Army Corps of Engineers, is essential to solving our water resource challenges, which are many. And this collaboration helps to limit the cost of missed opportunities, pro-

motes better planning, provides better transparency, results in more fiscally and environmentally sound projects.

A question for you, if I could. How can the Army Corps adapt its efforts to promote integrated planning and management? Please.

Ms. UFNER. You are talking integrated planning from the concept of Environmental Protection Agency but using it also within the Army Corps of Engineers?

Senator CARPER. Yes.

Ms. UFNER. And basically how to—it is a big issue for us with water issues, whether in the Corps or the Army Corps to address Clean Water Act issues in a holistic way. That essentially includes potentially—I don't want to say bundling projects, but it is a way for us to look at what is the most important thing. We are still meeting our Clean Water Act goals in the Corps, or EPA. But we can do it in a much more affordable way. That is something that NACo has been supporting within the realm of the Clean Water Act.

Senator CARPER. Thanks.

I want to go back to something I said earlier in my opening statement. I am going to ask you to join me in an airplane, and let's go up to about 30,000 feet. I would like for you to react to what I am going to repeat, what I said earlier. As the 2017 hurricane season illustrated, our nation—I spent some time in Puerto Rico and spent some time in the Virgin Islands, spent some time in Houston and saw the kind of devastation that we are going to pay for for a long time, long, long time.

But as the recently departed hurricane season illustrated, our nation needs to be a resilient one that is ready for the next storm, flood, or drought event, because it is coming. In fact, just this week, NOAA, as was said earlier, NOAA estimated that the total cost for extreme weather and climate events exceeded $300 billion, which is a new annual record for the U.S. So it is clearly not a matter of if our next extreme weather event is coming, but when.

Together, the Corps' navigation and flood risk management activities accounted for more than 70 percent of the agency's annual civil works appropriation. But the Corps has or shares jurisdiction, as we know, over any number of critical civil works program. They include environmental stewardship; they include hydropower; they include recreation; they include emergency management and water supply.

Unfortunately, in the mid-1980s Federal funding for new project construction and major rehab began to decline steadily. With this trend, the Corps in its actions has shifted to operations, to maintenance, to rehabilitation of existing infrastructure, and a backlog of deferred maintenance has continued to grow ever since. As a result, much of the Corps infrastructure is now exceeding its useful life plan.

If you were sitting on this side of the dais, as members of this Committee, what would you be doing about it?

We will start with you, Steve, please.

Mr. COCHRAN. I think that situation you described is incredibly debilitating to the people who work at the Corps of Engineers. They are, many of them, quite skilled, quite talented, and quite able. And yet they—the vision of what it could be and what they

need to be is completely overwhelmed by a backlog of things that they are not getting done.

So it does seem to me that it is essential to find a way to overcome the backlog. Not by doing all the projects; frankly, that is not going to work. But by creating a new vision that actually does, we talk a lot in Louisiana about getting ahead of the next storm, the same way you talked about in your opening statement. Well, that is critical, because otherwise you are always playing catch up. That is what the Corps is doing now. That is all they can do, is play catch up.

I don't actually mean this, but we should either give them a real job to do, or we should just get rid of them. Because the way it is right now—Mr. Robinson said earlier—everybody has learned how to do more with less. That is just business as usual. If you do that long enough, you give up on what you really need to do. I think that is what the Corps has done.

Senator CARPER. Thank you for that.

Ms. Carter, please.

Ms. CARTER. CRS has no opinions or reactions. But one of the topics that may be of concern in the future is the dam and levee safety issues. The Corps should be coming out in the next few months with reports related to some of the infrastructure investment needs in that area, including related to I-walls, which are one of the pieces of infrastructure that failed in New Orleans and contributed to the costs to the Federal Government for emergency response and recovery.

Figuring out how aging infrastructure like that fits into the infrastructure package in the long run will help or hinder the Government's ability to manage its risk.

Senator CARPER. OK.

Well, I am going to ask you to react to what I said earlier and just repeat it, please.

Mr. FRIEDMAN. Absolutely, Senator. With my AAPA hat on, I would repeat what I have said, which is that our ports want to see the continued movement toward full use and spend of the Harbor Maintenance Trust Fund. That would make a tremendous difference for us. We are grateful for the progress that Congress has made and you have made in that direction recently. The numbers are remarkable from where we were 5 or 6 years ago. Then we would again submit that our waterways, our water infrastructure needs to be viewed very high priority in any upcoming infrastructure legislation that is passed out of Congress.

And then speaking for myself, if I were on your side and in your shoes, I would think back to when the Army Corps, the days when the Army Corps was building some of the greatest public works projects known to man, the Panama Canal, our great dams, and other waterways and waterworks. I think we need to get back to that spirit of, we can do this. We have to fund it, but we can do it, we can address these issues. I could share the view that without enough funding, there is not much the Corps can do. They are fighting this backlog perpetually. I think we have to start thinking on a bigger scale to address these problems and make that a national priority.

Senator CARPER. Thank you.

Julie.

Ms. UFNER. Thank you, Senator. Actually two thoughts on that, well, several thoughts. There is such a backlog within the Corps, and the need within the communities are so huge. There are communities out there that would love to partner with the Corps on projects, but there is no funding. They don't meet the cost-benefit analysis. And the technical assistance that the Corps offers is so valuable.

Having said that, there is a lot of challenges within the Corps, with the processes, the bureaucracy, complex requirements that make it very difficult, even if counties do want to partner with them, that they make go to other Federal agencies first, because it may take 10 years through the Corps as opposed to 7 years somewhere else.

Senator CARPER. Good, thanks.

Mr. ROBINSON. I hate to beat a dead horse, but the Civil Works program in the country for many, many, many years has delivered significant benefits to the country. And revenues to the Treasury, revenues far in excess of the cost of the program. It is time to reinvest some of those earnings back into the system, instead of using up the principal, the capital, that was originally invested.

Senator CARPER. All right, thanks. That is good. Thank you all. This is a good hearing, and we appreciate very much all you have added to it.

Senator BARRASSO. Just a couple quick questions.

Mr. Friedman, when you talked about the days of the Panama Canal, there is an excellent book by David McCullough, I don't know if you have had a chance to read it, The Path Between the Seas.

Mr. FRIEDMAN. I have read it.

Senator BARRASSO. The comment about the time, the complexity, the bureaucracy, all of those things. The title is actually The Path Between the Seas: The Panama Canal, 1870–1914. It spanned a 44 year plan and the issues. They actually had to find a cure for a major disease that was killing a lot of people down there at the time of the construction. So it was a remarkable achievement, and it was over 100 years ago. Thanks for bringing that up.

Ms. Ufner, there were several projects and programs passed in the Water Infrastructure Improvements for the Nation Act, to reduce flooding, ice jam prevention, you mentioned mitigation pilot programs. In your opinion, how important is preventing flooding to the economic health of rural communities?

Ms. UFNER. To reiterate what we mentioned before, it is immeasurable. Communities are responsible, counties in particular are responsible for health and public safety. We take many measures to ensure that our public is protected. We are the first on the scene of any emergencies, flooding disasters. When they result in deaths and/or damage to our economies, ultimately it impacts the national economy. So it is huge that we are able to address this long term, and figure out the steps that we need to get there in the end together.

Senator BARRASSO. One of the things I don't think I had mentioned yet was in terms of, because I continue to advocate maintaining this network of stream gauges and snow pack monitors

throughout the Upper Missouri Basin. I don't know if you are familiar with these; these are gauges that are used to monitor snow depth, snow moisture, to help inform agencies like the Corps as to potential flooding, issues of drought as well.

So in your opinion, is there more than can be done to better predict flood and drought than what we are doing here?

Ms. UFNER. There is definitely more than can be done. What we are hearing from our counties is that there needs to be more available data, and that it is reliably updated. We hear this a lot about the LIDAR data used for NFIP, or also flood elevation data that is not readily available and/or updated. For communities to make the most efficient decisions in their community, they need the most up to date information.

Senator BARRASSO. Thank you. Thank all of you. Some members may ask——

Senator Carper.

Senator CARPER. Thank you, Mr. Chairman. I have a question, but I am not going to ask it now. I just want to flag it for Mr. Cochran with regard to flood risk management and beach nourishment. I will submit a question for the record. One of the things that is important to a lot of us on the east coast, from Maine down to Florida, is the issue of cost-benefit ratio not just with regard to beach renourishment, but actually building the dune systems and so forth that protect a lot of our coastal towns and communities. We are going to send that to you. Be sure to take a good look at that.

Thank you very, very much, all of you. You have done a great job.

Senator BARRASSO. In follow up, members may submitting written questions to each and every one of you. I ask that you follow up quickly for the record. The hearing record will remain open for 2 weeks. I want to thank all of you for being here, for your time and your testimony.

The hearing is adjourned.

[Whereupon, at 11:50 a.m., the hearing was adjourned.]

[Additional material submitted for the record follows:]

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January 10, 2018

Dear Chairman Barrasso and Ranking Member Carper:

Thank you for your leadership in holding a hearing on "America's Water Infrastructure Needs and Challenges." The National Audubon Society is pleased to submit this letter and attached report as testimony for the record on this important topic.

The National Audubon Society works at over 1,000 sites across all our coasts. At some of these sites, we are pioneering efforts to tackle extreme weather events and sea level rise for birds and people through natural infrastructure projects. As we have seen from recent hurricanes, developing natural infrastructure is more critical than ever. Combined, Hurricanes Harvey, Irma, Maria and Nate caused over 200 deaths, an estimated $330-630 billion in damages, evacuation of millions of people, and extreme habitat loss. Federal investment in natural infrastructure will help increase preparedness of coastal communities and economies, while benefitting fish and wildlife, which also often provide a critical foundation for coastal economies.

Attached, please find Audubon's Natural Infrastructure Report, which highlights some of Audubon's efforts that help tackle both near- and long-term threats confronting wildlife and their habitats while benefiting and sustaining healthy coastal communities. These efforts include work conducted by the State of Louisiana, federal permitting agencies, and our non-governmental organization partners on the Mid-Barataria Sediment Diversion, which was the focus of the Restore the Mississippi River Delta testimony today. This report also includes efforts in California, Florida, Maryland, North Carolina, South Carolina, and Texas that demonstrate the benefits of natural infrastructure approaches along our coasts.

Please let us know if you have questions about this report and we look forward to working with you on this important issue.

Sincerely,

Sarah Greenberger
Vice President for Conservation
National Audubon Society

Audubon

NATURAL INFRASTRUCTURE REPORT

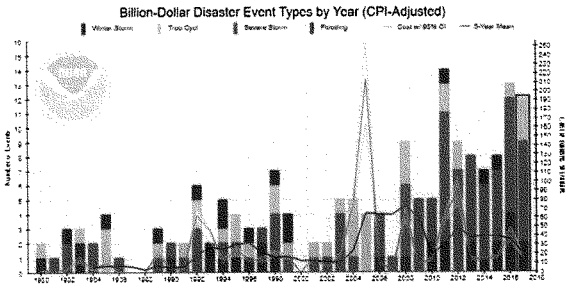
Audubon works at over 1,000 sites across all our coasts. At some of these sites, we are pioneering efforts to tackle extreme weather events and sea level rise for birds and people through natural infrastructure projects. As we have seen from recent hurricanes, developing natural infrastructure is more critical than ever. Combined, Hurricanes Harvey, Irma, Maria and Nate caused over 200 deaths, an estimated $330-630 billion in damages, evacuation of millions of people, and extreme habitat loss. Federal investment in natural infrastructure will help increase preparedness of coastal communities and economies, while benefitting fish and wildlife, which also often provide a critical foundation for coastal economies.

As coastal populations and development increase, so does the severity of coastal threats. The U.S. has experienced an increasing amount of billion dollar disaster events – from 1980-2016 there were 5.5 events per year, but from 2012-2016, there were 10.6. Natural infrastructure is critical to help coastal communities prepare and recover from these events by buffering storm damage, absorbing flood waters, and providing a front line of defense between storm impacts and communities.

Proactively rebuilding eroded barrier islands, restoring wetlands, constructing living shorelines and more help mitigate the impact of hurricanes, flooding, and sea level rise on coastal communities. Natural infrastructure enhances coastal resiliency, creates necessary habitats for birds and other wildlife, and safeguards the robust coastal economy. Coastal regions provide 40% of US employment, support more than 69 million jobs, and generate half of the nation's Gross Domestic Product. Coastal restoration creates 30 jobs for each million dollars invested.

Additionally, natural infrastructure helps decrease the costs of natural disaster damage:

- Studies show that a 2.5-acre decrease in wetlands corresponds to a $33,000 increase in storm damages.
- In the Chesapeake Bay, for every dollar spent constructing living shorelines, up to $1.75 is returned to the economy.
- New Jersey's freshwater wetlands on average save $3 billion per year in avoided losses from floods, storm surges, and other disturbances.



The cost and frequency of billion dollar disasters has increased in the U.S.

We work closely with our partners across the federal government on natural infrastructure and restoration projects, including the Department of Agriculture, Natural Resources Conservation Service; Department of Commerce, National Oceanic and Atmospheric Administration; Department of Defense, Army Corps of Engineers; Department of the Interior, Fish and Wildlife Service; and the Environmental Protection Agency. It is critical that these programs receive adequate funding to decrease future risks and increase preparedness of coastal communities. Natural infrastructure solutions need to be supported as part of the recovery efforts after natural disasters so we build back communities to be stronger and better prepared for future storms. This report highlights some of Audubon's efforts that help tackle both near- and long-term threats confronting wildlife and their habitats while benefiting and sustaining healthy coastal communities.

Photo Credit NOAA

Audubon CALIFORNIA

ARAMBURU ISLAND SHORELINE PROTECTION AND ECOLOGICAL ENHANCEMENT PROJECT

Aramburu Island is located adjacent to Richardson Bay Audubon Center and Sanctuary, along the shoreline in the northwest region of Richardson Bay, south of San Francisco Bay. It was originally created from fill material as part of the Strawberry Spit, but it was converted into a 17-acre island in 1987 as wildlife habitat mitigation for development of the southern portion of the spit. Prior to restoration, the island was degraded by shoreline erosion and non-native plant colonization. The site was designated as an open space area under the Marin County General Plan.

Timeline: 2011-2018
Location: Richardson Bay, Tiburon, California
Partners: Marin County, U. S. Fish and Wildlife Service
Costs: $1.1 million
Funding Source: U.S. Fish and Wildlife Service

The Aramburu Island Shoreline Protection and Ecological Enhancement Project was funded through recovery efforts from the 2007 Cosco Busan Oil Spill. The project was initiated in 2011 by Audubon California working in partnership with Marin County Department of Parks and Open Space to enhance the natural resource value of the area. The project goals include: 1) reducing erosion of the eastern shoreline; 2) creating wetland and terrestrial habitats to support a range of target species and natural communities; and 3) providing a platform for enhancing resilience to sea-level rise.

View from the Richardson Bay Audubon Center and Sanctuary.

Project Benefits:

San Francisco Bay is a highly urbanized area that is home to more than 7 million people. It also supports diverse natural communities dependent on conserving healthy ecosystems in the baylands between the open water to the upland extent of tidal influence. The bayland ecosystems are comprised of an interconnected mosaic of habitats, including the living shorelines at the edge of the bay that provide support of ecological functions for numerous species. Islands and beaches provide critical ecological functions, including providing food or cover for birds.

The project was constructed in 2011 and provided jobs for construction and technical staff to complete the work. It increased coastal resiliency by stabilizing the eroding shoreline through introduction of cobble materials and enhancement of habitats which resulted in an increased use by populations of waterbirds, including nesting Black Oystercatchers. It provided flood and erosion protection for nearby homes along the shoreline, and it served as one of the only models for shoreline enhancement in San Francisco Bay. Ongoing monitoring includes examining waterbird and invertebrate response and oyster restoration.

Audubon employees and volunteers complete ongoing monitoring projects.

Photo Credit Photos provided by John Takekawa, Director of San Francisco Bay Programs, Audubon California

Audubon FLORIDA

EROSION CONTROL BREAKWATER REEF AT RICHARD T. PAUL ALAFIA BANK BIRD SANCTUARY

The Richard T. Paul Alafia Bank Sanctuary is comprised of two islands in Tampa's Hillsborough Bay, leased from and managed in collaboration with The Mosaic Company and Port Tampa Bay. This Globally Important Bird Area supports more than 13,000 nesting pairs of 18 shorebird, seabird, and wading bird species. Storm-driven waves and increasingly large ship wakes over the years have caused substantial erosion, washing away the sandy shoreline and toppling trees into the water. Audubon works with the Mosaic Company and Port Tampa Bay to add onto the successful existing breakwater oyster reef habitat, which intercepts onshore wave and wake energy from storms and shipping traffic in Tampa Bay, a major port. In addition to ongoing erosion, Hurricane Irma caused damage to the sanctuary where breakwater structures have not been installed. The Alafia Bank continues to experience rapid loss of critical habitat along the northern shoreline not protected by offshore breakwaters. Events like Hurricane Irma exacerbate and accelerate this process and will continue to do so until breakwater array is completed.

Timeline: 2011-TBD
Location: Hillsborough Bay, Tampa Bay, Florida at the mouth of the Alafia River
Partners: The Mosaic Company, Port Tampa Bay, Living Shoreline Solutions, Reef Innovations
Costs: $2.1 million
Funding Sources: National Fish and Wildlife Foundation, Environmental Protection Commission of Hillsborough County, Tampa Bay Estuary Program, Living Shorelines Solutions, Reef Innovations, Coastal Resources Group, Tampa Audubon Society, the Mosaic Foundation, and many donors to Audubon

Project Benefits:

Erosion control at Alafia Bank is beneficial to more than 13,000 nesting pairs, including some of Florida's rarest birds: Little Blue Herons, Tricolored Herons, Reddish Egrets, Roseate Spoonbills and American Osytercatchers. The sanctuary hosts one of the region's largest White and Glossy Ibis colonies and the state's largest spoonbill colony. It also creates underwater structure for benthic invertebrates and their sportfish predators. Seagrass can recruit in the calm waters behind the breakwaters. This is an important site for rare Diamondback Terrapins. Recovery of this species on public lands and private preserves like this one will help reduce any potential regulatory burden on private landowners that would result from their listing.

Breakwater reef protects Alafia Bank from destructive erosion.

In 2016, the Florida Fish and Wildlife Conservation Commission created 13 new and expanded 5 existing Critical Wildlife Areas, essential for the survival of the state's waterbirds. These designations allow for the posting of no-entry, in-water buffers to protect these vulnerable areas from disturbance. Alafia Bank was granted a year-round closure with a buffer, and is among the most important of this network of sites crucial to the survival of these species in Florida.

Erosion control at Alafia Bank provides many jobs and is beneficial to Florida's economy. Each phase has required the subcontracting of private engineering services, wave attenuation device fabrication, barge rental and placement staff. Wildlife viewing in Florida generates more than $5 billion per year in economic impact, from domestic visitors alone. Alafia Bank is responsible for fledging a substantial number of the most sought-after species in the region for birdwatchers, including Reddish Egret, Roseate Spoonbill and American Oystercatcher. The breakwater also provides important reef and essential fish habitat and has become a destination for recreational and professional anglers.

Photo Credit Photo provided by John Landon

Audubon LOUISIANA

MID-BARATARIA SEDIMENT DIVERSION

Within the Barataria Basin, wetland loss averaged 5,700 acres per year between 1974 and 1990 due to natural erosional processes and human activities of channelization, levee construction and development. The Mid-Barataria Sediment Diversion is needed to reverse past and mitigate future land loss. This project will replicate natural deltaic and sedimentation processes by directing sediment, fresh water and nutrients from the Mississippi River into adjacent degrading wetlands in Barataria Basin to build and sustain tens of thousands of acres. The 2017 Louisiana Coastal Master Plan shows that the land area built or maintained by the project, based on Delft-3D modeling analysis, is projected to be approximately 8,000 acres in project year 2020, and nearly 30,000 acres over the 50-year lifespan of the project.

The Mid-Barataria Sediment Diversion has been studied by state and federal agencies since 1984. The project was included in the U.S. Army Corps of Engineers and state of Louisiana civil works study called the Louisiana Coastal Area (LCA) Ecosystem Restoration Study. The study culminated in 2004 with a programmatic level main report and Environmental Impact Statement (EIS). The project has since been included in the state of Louisiana Coastal Master Plans in both 2012 and 2017 as one of its highest priority projects for rebuilding Louisiana's wetlands.

Timeline: Permitting underway with construction set to be completed 2020-2021

Location: Myrtle grove area, Plaquemines Parish, along the west side of the Mississippi River, influencing Barataria Bay

Partners: State of Louisiana and Federal permitting agencies (NOAA, DOI, Corps of Engineers)

Costs: $1.3 billion

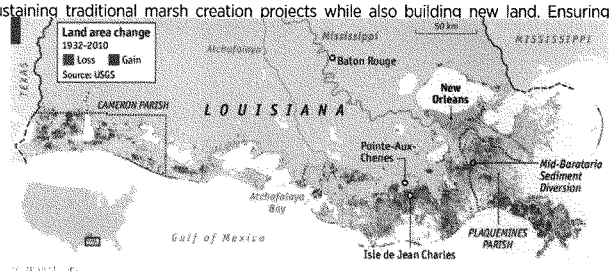
Funding Sources: Army Corps of Engineers, National Fish and Wildlife Foundation, National Resource Damages Act, the RESTORE Act, and more

Brown Pelicans in the Mississippi River Delta are among many species that will lose important habitat.

In January 2017, the Mid-Barataria Sediment Diversion was designated as a covered project under the Fast-41 Federal Permitting Dashboard, a public platform that tracks agency reviews and permitting for projects of national significance. Audubon and partners are working to expedite permitting for and approval of this project.

Project Benefits:

Since diversions reestablish natural deltaic processes and continuously build land over time, they provide long-term benefits that constructed marsh creation projects alone do not. Sediment diversions provide a regular supply of sediment and fresh water to wetlands, sustaining traditional marsh creation projects while also building new land. Ensuring wetlands throughout Barataria Basin would safeguard critical habitat for important birds and other wildlife, including several endangered species, resulting in higher biodiversity and productivity. Additionally, these new and sustained wetlands provide a buffer from storm surge for communities and industry.



Land loss area change in Louisiana from 1932-2010.

Photo Credit From top to bottom: Ned Haight Flickr CC (BY-NC-ND 2.0); economist.org

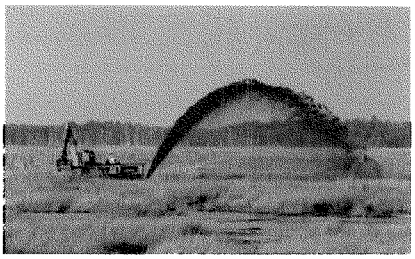
Audubon MARYLAND-DC

BLACKWATER CLIMATE ADAPTATION PROJECT

Blackwater National Wildlife Refuge lies at the core of the Southern Dorchester County Important Bird Area, whose marshes not only support a unique salt marsh bird community but also are essential to a local economy based on farming, fisheries, and tourism. However, nearly all of the tidal marsh here is predicted to disappear beneath rising seas by 2100. In the planning phase of the project, Audubon and partners combined the results of habitat management, research, sea level rise models and marshbird surveys to develop a suite of strategies for increasing marsh resilience to sea level rise, and to prioritize locations where their implementation is most feasible.

Timeline: January 2011 - December 2018
Location: Dorchester County, Maryland
Partners: The Conservation Fund, U.S. Fish and Wildlife, Sustainable Science LLC, U.S. Geological Survey, Maryland DNR
Costs: $3.5 million
Funding Sources: Town Creek Foundation, USFWS, Maryland DNR, National Fish and Wildlife Foundation (Hurricane Sandy Coastal resilience award to TCF), Wildlife Conservation Society, France-Merrick Foundation

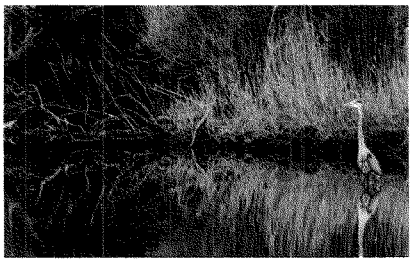
Implementation projects to date include experimental tree removal to facilitate upslope migration of tidal marsh into salt-stressed forest and the application of 26,000 cubic yards of sediment dredged from the Blackwater River onto 40 acres of submerging marsh to raise the marsh elevation and reinvigorate marsh vegetation. A new project that began in 2017 will halt and reverse erosion in a marsh recently transitioned from uplands where ponded water in a collapsed basin is causing vegetation loss. By extending the head of a tidal creek into this basin we will relieve flooding, enhance tidal exchange, and revive marsh vegetation.



Dredged material getting deposited at Blackwater National Wildlife Refuge.

Project Benefits:

The goal of the Blackwater Climate Adaptation Project is to ensure the persistence of the tidal marsh ecosystem and its unique birds and other wildlife in the face of sea level rise. The benefits of preventing the loss of these marshes are enormous and relate to the local economy, quality of life, ecosystem health, and biodiversity. This area supports hundreds of people in small communities and could convert to open water by 2100. Dorchester County's 84,000 acres of tidal marsh act as a buffer for local communities against sea level rise and support countless nursery areas for hatchling fishes in their creeks. Blackwater refuge receives 200,000 visitors annually, over two-thirds of visitors to the county, who add millions of dollars to the County's economy. The marshes also act as a filter and a sink for nutrient pollution and help the Chesapeake Bay attain the nutrient reduction targets set in the 2014 Chesapeake Bay Agreement.



A Great Blue Heron in the Blackwater National Wildlife Refuge.

Dorchester County's marshes are home to 30,000 wintering waterfowl and a salt marsh bird community including species entirely dependent on this ecosystem, such as Saltmarsh Sparrow and the eastern Black Rail. Both of these species are in rapid decline and threatened with extinction within decades. If a core of high-quality marsh can be safeguarded there is hope for these species.

Photo Credits From bottom to top: Middleton Evans/Audubon Board Member; James O'Guinn/Flickr CC (BY 2.0)

Audubon NORTH CAROLINA

CURRITUCK SOUND MARSH RESTORATION

In 2010, the US Army Corps of Engineers completed a multi-year, multi-stakeholder study and found marsh and submerged aquatic vegetation (SAV) is disappearing, especially in mid-Currituck Sound. The study predicts 430 acres of marsh will disappear every 6 years. Marsh and SAV should be recovered to sustain the health of the estuary and provide natural buffers that reduce impacts of storms and flooding. Audubon and partners aim to construct terraces in the mid-Currituck marsh complex to break wave energy, reduce marsh loss, allow new marsh and SAV to become established, and provide a zone where marsh can be restored.

Timeline: Initial planning underway; construction phase depends on funding
Location: Mid-Currituck Sound between Duck and Corolla, North Carolina
Partners: Alliance for Currituck Sound partnership: Currituck County, USFWS, NERR, USACE, NCWRC, Chowan University, Sea Grant, TNC, Albemarle-Pamlico NEP, and more
Costs: $1 million
Funding Sources: Private foundations, and individuals

Project Benefits:

The marsh complex is designated as a global Important Bird Area for waterfowl and supports healthy populations of Osprey, marsh birds, herons and egrets. It is designated essential fish habitat by NOAA for species such as Bluefish and Summer Flounder, and supports significant populations of Striped Bass, Mullet, Blue Crabs, and White Perch. A study by the North Carolina Natural Heritage Program found the presence of several rare plant species in the marsh, and that Endangered Atlantic sturgeon and West Indian manatee frequent the marsh channels.

Essential ecosystem services of marshes and SAV are significantly diminished by the loss of these habitats. Tidal marshes and SAV provide nursery grounds for fisheries, food for wildlife, and export large amounts of detritus that forms the foundation of aquatic food webs. The loss of these habitats threatens fisheries and wildlife that are important to the lives, livelihoods, and economy of the Sound's residents and businesses. Marshes also provide buffering benefits that reduce the damaging impacts of storms and flooding, which are all-too frequent along North Carolina's coast.

A Green Heron at a marsh in Currituck Sound.

To preserve and enhance the societal and ecological benefits the marshes of Currituck Sound provide, Audubon created the Alliance for Currituck Sound, a multi-stakeholder group of agencies, NGO's and users (watermen, hunters, and recreational companies). Bordering the sound, Currituck and Dare counties depend on tourism for income, as tourism generates over $1 billion annually in this area. The natural wonders of the famed Outer Banks attract tourists, and while the beach is a dominant draw, more sound-side recreation is critical. These activities, combined with the Heritage uses of the sound - fishing, crabbing, and most especially waterfowl hunting - are the economic lifeblood of the community.

Audubon and members of the Alliance have already sought multi-millions of dollars in grants to restore and enhance the sound. These ecological infrastructure projects, such as the demonstration living shoreline project at the Donal C. O'Brien Audubon Sanctuary, will protect traditional jobs while creating new ones in coastal engineering and adaptation to sea level rise. Without these marshes, the culture, economy, and even the physical structure of the Outer Banks would literally wash away.

Photo Credit Christopher Elliot/Audubon Photography Awards

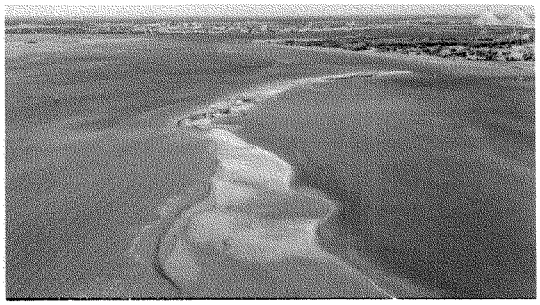
Audubon SOUTH CAROLINA

CRAB BANK SEABIRD SANCTUARY RESTORATION

Crab Bank is a narrow slice of sand in Charleston harbor that historically has supported up to 5,000 nesting birds in one season. It's one of just five Seabird Sanctuaries protected by the South Carolina Department of Natural Resources and is a designated Globally Important Bird Area by Audubon. But wind and waves have taken a toll on Crab Bank. Today, less than 100 birds can nest on this shrinking crescent of sand. Audubon and partners support the renourishment of Crab Bank using dredged material from Charleston Harbor, which would make the now 0.5 acre island a huge 80 acre island. It will cost the Army Corps of Engineers an estimated $3.5 million to create habitat from dredged material rather than dumping the sand out in the ocean.

Timeline: 2017 - 2019
Location: Charleston Harbor, Crab Bank Seabird Sanctuary, at the mouth of Shem Creek in Mt. Pleasant, Sout Carolina
Partners: Audubon South Carolina, Coastal Conservation League, South Carolina Aquarium, South Carolina Department of Natural Resources, Coastal Expeditions, South Carolina Wildlife Federation
Costs: $3.5 million
Potential Funders: US Army Corps of Engineers, South Carolina Port Authority, private funding

Project Benefits:



Crab Bank has diminished to a narrow slice of sand.

Crab Bank is protected during the nesting season from human disturbance. These islands are vital for the success of beach nesting seabirds and shorebirds, which include many species in decline. Data state that Crab Bank also serves as a secondary site for other established colonial sites subject to severe tidal overwash or human disturbance. In 2007, the island supported 15 breeding pairs of American Oystercatchers, 179 Black Skimmer nests, 615 Brown Pelican nests, 50 Gull-billed Tern nests, 1,212 Royal Tern nests, and 35 Sandwich Tern nests. These birds rely on safe places to recover and maintain healthy populations. With an increasing number of people moving to the coast, beach-nesting bird habitat faces more risks than ever. Maintaining Seabird Sanctuary islands should be paramount on the coast. Beneficial Use Project Alternative 1a would re-nourish Crab Bank and prevent vital bird habitat from disappearing. More sand on Crab Bank would restore bird habitat and put the dredged sand to use.

The added wave energy from larger container ships navigating Charleston Harbor also poses a potential problem to beach nesting birds. Added sand to Crab Bank would mitigate this problem and provide a base to create living shorelines, which can decrease erosion due to wave energy. Additionally, this project will help restore oyster reefs near the island. Oyster reefs provide microhabitat for small marine organisms and improve water quality for fisheries habitat. This island is a fantastic resource for people living and visiting Charleston and adds enormous aesthetic and economic value to Shem Creek and greater Charleston areas. Birds and other wildlife are what makes South Carolina such a beautiful place to live and visit, and has made South Carolina a successful area to do business.

Photo Credit Vanessa Kauffmann, acquired written consent

Audubon TEXAS

EROSION CONTROL AND RESTORATION ON CHESTER ISLAND

Timeline: October 2016 – ongoing
Location: Matagorda Bay near Port O'Connor, Texas
Partners: US Army Corps of Engineers
Costs: $5.1 million
Funding Sources: U.S. Army Corps of Engineers

In the 1960s, the U.S. Army Corps of Engineers (USACE) created a 200-acre island, called Chester Island (formerly known as Sundown Island) using dredged material from the Matagorda ship channel that Audubon now manages. This island is one of the largest bird sanctuaries on the Texas coast, providing nesting habitat for thousands of colonial waterbirds every year. The system is susceptible to severe erosion from high velocity currents from annual wind and storm events plus ship wakes from vessels coming in and out of Matagorda Ship Channel. From 1960 to 2017, the island lost 117 acres and even more after Hurricane Harvey devastated the island. High winds and storm surge from Hurricane Harvey caused harmful impacts including erosion that shifted the shoreline, the mortality of many birds, land loss of another 7 acres, wetland breaches leaving a strong flow in and out of the island, sediment loss leaving embankments up to 20 feet, substantial vegetation loss, and large amounts of trash deposited on Chester Island. Loss of nesting vegetation and ground nesting habitat devestated the amount of colonial waterbird species and their composition, which will likely impact future nesting seasons.

Beginning in 2007, Chester Island lost its source of supplemental dredge material due to USACE's decision to realign the Intercoastal Waterway. Since then, the island has lost close to 35 acres. In 2014, the USACE began working with Audubon to re-supplement the island. Helping to offset the continued erosion, restoration is an ongoing effort. In 2017, USCAE added 1 million cubic yards of beneficial use material to the coastline of the island. After Hurricane Harvey devastated the island, more dredge material is needed to mitigate the impacts of erosion and habitat loss. Audubon also plans to hire a contractor to move material within the island to provide more suitable bird habitat.

Project Benefits:

Chester Island is a vital part of Texas' coastal economy as it serves as one of the largest colonial waterbird nurseries on the Texas coast, helping to make Texas one of the leading ecotourism states on the Gulf. The Texas coast attracts birders and nature-lovers from all over the world bringing tourists to restaurants, hotels and recreational activities near the Central Coast and communities like Port O'Connor, Texas. Due to its distance from the mainland, birds have a safe sanctuary where predators are easily controlled and human disturbance is minimal. During the nesting season, Chester Island usually hosts 17,000-20,000 breeding pairs of 18 different bird species.

Chester Island was impacted by Hurricane Harvey causing severe cliff erosion and gathering of young Brown Pelicans.

Dallas, Houston and Austin were among the country's fastest growing cities in 2009. As Texas' population grows and coastal development increases, nesting oases become rare. Barrier islands are critical to ensure nesting bird species have a safe place to reproduce.

Rookery islands like Chester are an important part of a resilient bay system and serve as a great litmus test of overall bay health. Productive islands mean healthy and productive marine ecosystems and fisheries. Additionally, they are a part of our larger barrier island system. Barrier islands protect coastal communities because they are the first line of defense during threatening storms and absorb much of the wave energy that erodes private and public beachfront properties. Recent observations found that after the passage of hurricanes in 2005 and 2008, restored barrier islands weathered the storms much better than adjacent non-restored areas. While the restored portions maintained their sandy beaches, unrestored portions eroded back to a predominantly marsh shoreline.

Photo Credit Courtesy of Audubon Texas

State of Louisiana JOHN BEL EDWARDS

October 18, 2017

Lieutenant General Todd T. Semonite
Commanding General and Chief of Engineers
U.S. Army Corps of Engineers
Attn: CECW-CO-N (Ms. Mary Coulombe)
441 G Street N.W.
Washington, DC 20314-1000

RE: Docket Number COE-2017-0004

Dear General Semonite:

On July 20, 2017, the United States Army, Corps of Engineers Subgroup to the DoD Regulatory Reform Task Force published a request for comment in accordance with Executive Order 13777 (Feb. 24, 2017), (Enforcing the Regulatory Reform Agenda) for input on its existing regulations, as defined in Section 4 of Executive Order 13771 (Jan. 30, 2017) (Reducing Regulation and Controlling Regulatory Costs), that may be appropriate for repeal, replacement, or modification."[1] In response, the State of Louisiana, through the Coastal Protection and Restoration Authority (CPRA), submits the following comments.

Introduction

After the devastation of Hurricanes Katrina and Rita in 2005, the Federal Government agreed to focus attention and money on Louisiana's coastal crisis, provided that the state met certain requirements. Instead of dealing with myriad state agencies, in 2006, in exchange for funding hurricane, storm damage reduction and flood control projects in the greater New Orleans and south Louisiana area at full federal expense, the Federal Government required Louisiana to establish one central authority that would represent the state, speak with one clear voice for the future of Louisiana's coast, be accountable for

[1] Executive Order 13777 defines "regulation" to mean "an agency statement of general or particular applicability and future effect designed to implement, interpret, or prescribe law or policy or to describe the procedure or practice requirements of an agency." In the Guidance Implementing Executive Order 13771, regulations are defined as not only promulgated regulations, but also "significant guidance documents (e.g. significant interpretative guidance)". *See* Memorandum from Dominic J. Mancini, Acting Administrator, Office of Information and Regulatory Affairs to Regulatory Policy Officers at Executive Departments and Agencies and Managing and Executive Directors of Certain Agencies and Commissions Regarding Guidance Implementing Executive Order 13771 (Apr. 5, 2017) (M-17-21), *available at:* https://www.whitehouse.gov/the-press-office/2017/04/05/memorandum-implementing-executive-order-13771-titled-reducing-regulation.

oversight of all activities and funds relative to coastal restoration and hurricane protection, and develop a coordinated plan of action with clear goals and achievable objectives.[2] Then in 2007, Congress demonstrated its support for restoring and protecting Louisiana's coastal ecosystem, and to the integration of hurricane protection and coastal restoration efforts in Louisiana by passing the Water Resources Development Act of 2007 (WRDA 2007), P.L. 110-114. Title VII of WRDA 2007 committed to not only certain flood reduction projects, modifications and enhancements in the Greater New Orleans and southeast Louisiana coastal region, but also to ecosystem restoration of the Louisiana Coastal Area (LCA)[3] through authorization of specific projects to be administered by the Corps that would restore critical wetlands around the Mississippi River delta and protect Louisiana's coastal infrastructure and natural resources. Section 7002 of WRDA 2007 also provided that the Secretary was to integrate hurricane protection into a comprehensive plan for protecting, preserving and restoring the coastal Louisiana ecosystem.

Louisiana responded to these federal initiatives by creating the Coastal Protection and Restoration Authority (CPRA) and *Louisiana's Comprehensive Master Plan for a Sustainable Coast* (Coastal Master Plan).[4] This plan, which is based on world class science and extensive public input, is the state's 50-year, $50 billion plan to restore and protect Louisiana's coast and is one of the largest, most ambitious integrated coastal protection plans in the world.

In creating CPRA and directing the development of the Coastal Master Plan, the Louisiana Legislature stated that "comprehensive integrated coastal protection must proceed in a manner that recognizes that the proper functioning of each protective element is critical to the overall success of the plan and that without such proper functioning the safety of the state and its citizens and the viability of the entire plan are threatened."[5] This is a directive similar to what Congress gave the Corps in 2007, and as such, CPRA's implementation of the Coastal Master Plan includes oversight of both the state's coastal levee system and implementation of large scale coastal ecosystem restoration projects. These efforts are designed to work together on an integrated systems basis to provide hurricane and storm damage risk reduction, combat Louisiana's land loss crisis, restore thousands of acres of

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[2] Department of Defense, Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico, and Pandemic Influenza Act, 2006, P.L. 109-148, 119 Stat. 2761 (109th Congress).

[3] Included within the LCA ecosystem restoration program authorized under Title VII of WRDA 2007 are requirements for comprehensive coastal restoration planning, program governance, a Science and Technology Program, a program for the beneficial use of dredged material, feasibility studies for restoration plans, project modification investigations, and restoration project construction, in addition to other program elements. This authorization was recommended by the Chief of Engineer's Report, dated January 31, 2005.

[4] A comprehensive electronic version of the 2017 Coastal Master Plan, with appendices, is available *at* http://coastal.la.gov/our-plan/2017-coastal-master-plan/.

[5] La. R.S. 49:214.1(C).

lost or degraded wetlands, and improve habitat for thousands of plant and animal species. Accordingly, it is the public policy of the State of Louisiana that hurricane protection and ecosystem restoration go hand-in-hand as efforts with the same goal in mind – longer-term and comprehensive integrated coastal protection.

This historic context and the priority that both the state and Federal government have put on the future of Louisiana's coast are important because the State of Louisiana loses an unprecedented amount of land to coastal erosion every year. Louisiana has already lost more than 1,800 square miles of land over the past 80 years, and predictions show that if we do nothing, we stand to lose twice that amount of land over the next 50 years. This is especially concerning given that Louisiana's coast is home to more than 2.5 million people, or more than half of the state's total population. This fragile coastal ecosystem also provides protection for infrastructure that services 90% of the Gulf's deepwater oil production, 20% of the nation's annual waterborne commerce, 26% (by weight) of the continental U.S. commercial fisheries landings, and winter habitat for five million migratory waterfowl. Louisiana's wetlands today represent about 40% of the wetlands in the continental United States and are home to the most productive fisheries in the continental United States. Consequently, the health and sustainability of our coast is of vital importance not only to those who live, work and play on the coast, but also to our nation.

In addition to our existing land loss crisis, Louisiana also suffered the worst impacts from the 2010 *Deepwater Horizon* (DWH) oil spill disaster, the largest marine oil spill in history. For 87 days, BP's Macondo well released an average of nearly 38,000 barrels (1.5 million gallons) of fresh oil each day into the Gulf of Mexico.[6] The scope of the DWH incident was unprecedented in terms of the quantity and extent of oil released.[7] Likewise, the scale of natural resources exposed to the spilled oil and other contaminants was also unprecedented.[8] By state, the majority of oiled shoreline (approximately 65 percent) was in Louisiana, including the vast majority of oiled wetland shorelines (95 percent).[9]

Given these challenges facing Louisiana, a strong partnership with the Corps, both through the LCA ecosystem restoration program and federal hurricane protection efforts, is critical to our ability to restore and protect our coast. We have demonstrated our commitment to these Corps programs by including many of those projects in the State's 2017 Coastal

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[6] Deepwater Horizon Natural Resource Damage Assessment Trustees. (2016). Deepwater Horizon oil spill: Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement at Chapter 4, Section 4.2.1, p. 4-29. Retrieved from http://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan

[7] *Id.*

[8] *Id.*

[9] *Id.* at 4.2.6 p. 4-70.

Master Plan, a plan which was unanimously approved by the Louisiana Legislature in June of this year. Not only is the Coastal Master Plan designed to ensure that these projects work in concert with a suite of other scientifically and publicly vetted projects to enhance restoration, but the Coastal Master Plan also identifies various funding sources, including state dollars, to implement the projects in our plan.[10] In fact, even though the Federal Government has yet to fund much of the LCA program, multiple LCA project components are already under construction and scheduled to be completed, as a result of these varied funding streams. The state has also taken proactive measures to protect its coastal funding streams by passing laws dedicating the funds it will receive under the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies (RESTORE) of the Gulf Coast States Act of 2012, and its Gulf of Mexico Energy Security Act (GOMESA) allocations, to its Coastal Restoration and Protection Fund to be spent solely on projects in the Coastal Master Plan.

In short, completion of the projects in the Coastal Master Plan, including those within the LCA program, would add or maintain over 800 square miles of coastal land and wetlands, compared to a future where no projects are built. By 2067, the projects in the plan would reduce flood damage by $150 billion. Unfortunately, even with all of the funding streams currently available to us, we still fall far short of fully funding our Coastal Master Plan. This is why it is incumbent on the State of Louisiana to ensure that every available cost saving measure is used, every identifiable efficiency is implemented, and every partnership is as effective as possible.

CPRA also fully recognizes that there is not a more important relationship for our coastal program than our partnership with the Corps. The Corps is the strongest and most advanced engineering agency in the entire world, and the Corps' commitment and our shared sense of urgency is critical to the long term resiliency of coastal Louisiana. Simply put, we cannot accomplish the goals of our Coastal Master Plan without the Corps. However, while CPRA continues to work with the Corps at the district, division, and Headquarters levels to strengthen cooperation between the state and federal entities and work out issues, there are several areas where we feel there are opportunities to further strengthen this partnership in response to the Corps' request for comment pursuant to Executive Order 13777 , including (i) land rights acquisition, (ii) in-kind crediting and cross

[10] While not all of the projects in the plan are fully funded, we have secured approximately $11.4 billion for our Coastal Master Plan over the next 15 years. This includes not only our *Deepwater Horizon* Natural Resource Damage Assessment (NRDA) and National Fish and Wildlife Funds (NFWF), but it also includes the Gulf of Mexico Energy Security Act of 2006, a funding steam we are relying on to support our coastal program going forward. In 2006, the people of Louisiana adopted a constitutional amendment that committed all revenues received by Louisiana from federal oil and gas development offshore to the restoration and protection of the Louisiana coast.

crediting, (iii) project completion and turnover, (iv) federal operations and maintenance responsibilities, (v) clarity on the Section 408 process, (vi) issues with Section 214 Agreements, (vii) concerns about unpublished regulations, and (viii) auditing. These are detailed below.

I. Land Rights Acquisition Issues

As an initial matter, in the context of land rights acquisition matters, CPRA is concerned about situations in which the practical application of written Corps regulations is much more rigid than what is actually required under the express terms of the regulation. More specifically, even though acquisition of land rights less than fee title are fully supported under existing Corps real estate guidance, in practice, the Corps recommends, or even requires, that fee title be used for our LCA projects. For example, 32 C.F.R. Part 644, contains multiple citations to E.R. 405-1-12, Chapter 12 of the Real Estate Roles and Responsibilities for Civil Works, Cost Shared and Full Federal Projects (May 1, 1998)[11]. A particular issue that CPRA has had with Corps interpretation of E.R. 405-1-12 relates to the tension between Section 12-9(a) of this regulation which states that "[i]t is the policy of USACE to acquire, or to require a non-Federal sponsor to provide, the minimum interest in real property necessary to support a project" and Section 12-9(b)(6), which provides that fee title is *generally* required for "fish and wildlife mitigation lands, ecosystem restoration, and other environmental purposes." Reasoned interpretation of these provisions is important to CPRA because this land rights policy applies to all of our LCA projects.

> ***Issue: Even though acquisition of land rights less than fee title are fully supported under existing Corps real estate guidance, in practice, the Corps recommends, or even requires, that fee title be used for our LCA projects.***

By the terms of the regulation, it may be that fee title would generally be required for LCA projects, but this should be weighed against the stated policy of acquiring only the minimum interest necessary to support a project. Indeed, requiring fee title for LCA projects is both unnecessary and needlessly costly. In fact, for over 20 years, the State of Louisiana has generally been able to obtain the necessary land rights from landowners at *no cost* for projects similar to our LCA projects, except for minimal transaction costs such as document, filing, and legal fees. Further, this practical application is troubling because

[11] Notably, this document is listed as a "restricted" file on the Corps' website and is therefore only available upon request: *see* http://www.publications.usace.army.mil/USACE-Publications/Engineer-Regulations/u43546q/4552203430352D312D3132/. Additionally, the version of Engineering Regulation 405-1-12 on the Corps' website is dated Nov. 20, 1985, while the version the State of Louisiana was provided is dated May 1, 1998. Accordingly, the version available upon request on the Corps' website appears to be outdated.

CPRA has completed projects using ecosystem restoration wetland creation estates (i.e. land rights less than fee title) under the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) projects for more than 25 years, wherein the state has partnered with multiple federal agencies, including the Corps on a 85% federal and 15% state cost share basis.

This practice of requiring fee title rather than a more minimal interest in real property is also perplexing in light of the safeguard against creating unduly burdensome land rights acquisition requirements for non-Federal sponsors found in Section 12-10(d) of E.R. 405-2-12. This regulation provides that "[b]ecause a non-Federal sponsor is generally responsible for acquiring lands, easements, and rights-of-way pursuant to state law and procedure, full coordination and consultation with the non-Federal sponsor must occur prior to the Government's determination of the interest and estates required for a cost shared project." This provision is critical because it should allow the Corps to adapt its land acquisition policies to different local jurisdictions. It is especially important to the State of Louisiana because this summer the Louisiana Legislature passed Act 199, which amends La. R.S. 49:214.5.5 and specifically prohibits the acquisition of any full ownership interest in property for integrated coastal protection unless certain exceptions apply.[12]

Despite the flexibility inherent in the Corps' regulations with respect to real estate acquisition, to date, the Corps has simply required fee title for Louisiana's ecosystem restoration projects or lesser estates that in all practicality are fee title like. Consequently, the State of Louisiana is very concerned about situations going forward where the Corps may decline to apply the flexibility inherent in the regulation – as it has in the past – and instead in practice require a rigid adherence to a "general" policy of requiring fee title for ecosystem restoration projects. A failure to apply flexibility where indicated would delay implementation of important projects if not stop the project altogether. Additionally, the procedure for approving non-standard estates is also overly bureaucratic given the apparent flexibility that exists to seek the minimum interest necessary to support a project. Section 12-10(c) of E.R. 405-2-12 pertaining to non-standard estates provides that approval of a non-standard estate may require approval from Headquarters through the Division, rather than having the District, which is more familiar with local issues and laws, approving all such estates. For example, the Corps' inability to allow CPRA to proceed with non-standard estates for the Barataria Landbridge project delayed this project for more

[12] Furthermore, federal and state eminent domain jurisprudence and case law potentially supports the legal premise of Act 199, i.e. that a governmental entity should not acquire an interest greater than that needed to accomplish the goals of a public project.

than half a decade, a project which was provided funds by Congress after Hurricane Katrina and offers safety and restoration for South Louisiana.[13]

> ***Recommendation**: That the non-standard estate be used for all Corps ecosystem projects in Louisiana, as has been done successfully for the past quarter century and as supported under the existing Corps real estate regulations.*

The State of Louisiana therefore requests that the non-standard estate be used for all Corps ecosystem restoration projects in coastal Louisiana, as has been done successfully for the past quarter century and as supported under the existing Corps real estate regulations despite the Corps' repeated assertions that "long standing policy" requires fee simple. Fee simple acquisitions are not compatible with Louisiana's working coast, they are not supported by landowners, they are difficult to acquire under state law and will significantly and unnecessarily increase the cost to implement projects. In many cases the State of Louisiana has been able to secure land rights for projects from land owners at no cost to the Corps or CPRA. In the case of the LCA program and the Mississippi River Gulf Outlet (MRGO), using this method of obtaining the land rights necessary for implementing projects under very restrictive conservation type easements at no cost to the Corps or CPRA, rather than acquiring land through fee title, would save approximately $50-$100 million across those projects.

As such, we request that the Corps avoid an inflexible, one-size-fits-all land rights acquisition policy that is not only more stringent than necessary, but could also prohibit a non-Federal sponsor from complying with the application of that policy due to state laws that are in direct conflict with that policy. Instead, we request that the Corps require only the minimum land rights necessary to carry out an ecosystem restoration project. We also ask that when determining what minimum land rights may be required, that the Corps take into consideration the traditional uses of the property in question and other land rights acquired in the past by the non-Federal sponsor for similar projects, including the CWPPRA program's non-standard estate. Given the costs savings that could be realized with non-standard estates, fee title acquisitions for LCA projects should be prohibited except where absolutely necessary for construction of the project or in cases where a landowner is willing to provide fee title to the property.

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[13] It should be noted that CPRA is currently working with the New Orleans District to develop a non-standard estate for an LCA beneficial use project in the form of a conservation type servitude/easement similar to the standard project servitude used by CPRA for CWPPRA and state only projects. However, at this time, the estate has not been approved by Corps Headquarters staff and provides a prime example of the difficulty presented by the current inflexible application of the rule by that imposes a lengthy approval process rather than delegating approval to the local Corps district in response to local conditions and property laws.

II. In-Kind Crediting and Cross Crediting

Section 1019 of the Water Resources Reform and Development Act of 2014 (WRRDA 2014), P.L. 113-121, amended Section 7007 of WRDA 2007 to clarify in-kind credit authority. As amended by Section 1019 of WRRDA 2014, Section 7007 of WRDA 2007 authorizes credit, in accordance with Section 221 of the Flood Control Act of 1970, as amended (codified at 42 U.S.C. § 1962d-5b), for (i) the cost of in-kind contributions for a study or project authorized in Title VII of WRDA 2007[14] carried out in the coastal Louisiana ecosystem by a non-federal interest "before, on, or after" the date of the execution of the partnership agreement for the study or project, and (ii) for the non-Federal sponsor to use credit accrued in excess of its cost share to apply that credit toward the non-Federal cost share for any other study or project carried out under Section 7007 of WRDA 2007 ("cross crediting"). Although these provisions provided a great deal of clarity with respect to crediting, the State of Louisiana has concerns with the process the Corps is requiring in order for Louisiana to obtain credits, the definition of what constitutes a creditable project, and the process for cross crediting.

> ***Issue: The Corps is requiring MOUs in order for CPRA to obtain credit under Section 7007 of WRDA 2007, a provision that does not contain MOU requirements.***

Although Section 1019 of WRRDA 2014 retroactively amends Section 7007(a) of WRDA 2007 to clarify that credit should be applied whether work was done "before, on, or after" the date of execution of a Project Partnership Agreement (PPA)[15], there still remain obstacles to the State of Louisiana's ability to receive credit. For example, the Corps has taken the position that the State of Louisiana must execute a written agreement or Memorandum of Understanding (MOU) with the Corps, before it can accrue credit for work in kind as provided in 42 U.S.C. § 1962d-5b. It is true that Section 7007(a) of WRDA 2007 references compliance with 42 U.S.C. § 1962d-5b, and 42 U.S.C. § 1962d-5b, as amended by Section 1018(d) of WRRDA 2014, does require execution of a MOU before work in kind credit may accrue. However, 42 U.S.C. § 1962d-5b, and its MOU requirements, only apply in

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[14] Title VII of WRDA 2007 authorizes the Secretary of the Army to carry out programs for ecosystem restoration in the Louisiana Coastal Area (the "LCA").

[15] WRRDA 2014 contained this clarification because the Corps had previously taken the position that Section 7007(a) of WRDA 2007 only allowed credit for work undertaken by the State of Louisiana ***before*** a PPA was executed and not ***after*** execution of a PPA. Such a position was entirely nonsensical because interpreting WRDA as eliminating post-PPA credit would have the practical and detrimental effect of precluding CPRA from entering into PPAs since only pre-PPA work would be creditable. This outcome would also have essentially eliminated the ability of CPRA to do work in kind as a non-federal sponsor, an ability that was permitting in the first place for situations where the non-federal sponsors can accomplish the work more quickly than the Corps.

situations where the non-Federal interest so requests. More specifically, 42 U.S.C. § 1962d-5b(H)(ii) provides as follows:

> The authority of the Secretary to provide credit for in-kind contributions pursuant to this paragraph shall be in addition to any other authorization to provide credit for in-kind contributions and shall not be construed as a limitation on such other authorization. The Secretary shall apply the provisions of this paragraph, in lieu of provisions under other crediting authority, only if so requested by the non-Federal interest.

Such a reading makes sense because there is an important distinction between the mandatory credit to be provided under Section 7007 of WRDA 2007, which does not contain MOU requirements, and the permissive credit available under 42 U.S.C. § 1962d-5b, which does contain MOU requirements. It would seem logical that Congress intended to have different MOU requirements in cases where crediting is not required compared to those where the provision of credits is mandatory. Indeed, Section 7000(a) of WRDA 2007 states that the Secretary "shall" provide credit for LCA projects, while 42 U.S.C. § 1962d-5b(a)(4)(A) and (B) apply to situations in which credit "may" be provided.

> ***Recommendation*: Per the language of 42 U.S.C. § 1962d-5b(H)(ii), the Corps should only require a crediting MOU if requested by the State.**

While the State of Louisiana acknowledges that certain aspects of 42 U.S.C. § 1962d-5b could be applicable to projects covered under Section 7000 of WRDA 2007, this provision would only apply upon the State's request to apply 42 U.S.C. § 1962d-5b. To date, the State has made no such request. Despite this, in order to expedite its ability to obtain work in kind credits, CPRA has executed several MOUs with the Corps. While we are trying to work with the Corps on this issue, the conflict in the statute has never been resolved.

> ***Issue*: The Corps is refusing to provide credits for discrete segments of ecosystem restoration projects even though Section 1014(b) of WRRDA 2014 clarified that credit could be provided for discrete segments of flood damage reduction projects.**

Not only is the State of Louisiana concerned about the Corps' interpretation of the process for obtaining credit, it is also concerned about the Corps' interpretation of what constitutes a project that is creditable. Section 1127 of the Water Resources Development Act 2016 (WRDA 2016), P.L. 114-322, amended Section 204 of the Water Resources Development Act of 1986 (WRDA 1986), P.L. 99-662, as amended by Section 1014(b) of WRRDA 2014, and clarified that credit could be provided for discrete segments of a flood damage reduction project, or separate element thereof, before the final completion of the project or separable element if certain conditions applied. In practice, the Corps has narrowly defined "flood damage reduction project" to mean only flood control projects and to exclude

ecosystem restoration projects that reduce flood damage. Conversely, it is the position of the State of Louisiana that certain ecosystem restoration projects – such as barrier islands which provide storm surge protection – should also be considered flood damage reduction projects. Additionally, on July 12 2017, the Corps issued guidance on Section 1127 of WRDA 2016 through E.R. 1165-2-504 stating that "credit for a discrete segment will not be made until construction of the discrete segment is complete."[16] Given the Corps' limited view of what constitutes a "flood damage reduction project", the Corps has also not defined what constitutes a "complete" discrete segment for ecosystem restoration projects such as barrier islands.

An example of this issue is the Barataria Basin Barrier Shoreline (BBBS) Restoration Project, a barrier island restoration project that includes beach restoration and marsh creation and which is authorized in Section 7006(c)(1) of WRDA 2007. CPRA has completed the beach restoration work for this project, which constitutes an independently functional portion of the project, but the Corps has yet to approve credit for that work. Instead, the Corps has taken the position that the State of Louisiana cannot receive in-kind credit for this work until the back barrier marsh restoration portion of the project is also complete.

> ***Recommendation**: That the Corps broaden its interpretation of "flood damage reduction project" under Section 1014(b) of WRRDA 2014 to include certain ecosystem restoration projects so that the State of Louisiana may realize approximately $350 million in credits for the separable elements of those projects.*

Situations such as the one we face with the BBBS Restoration project prevent us from obtaining our credit in a timely manner which limits our ability to cooperate on projects. Without viable credits we have to wait until we have cash to put towards a project. There is currently over $350 million in potential credit under Louisiana's LCA program that the Corps has yet to approve because it is requiring completion of the entirety of these projects rather than completion of discrete segments.

Essentially, the outstanding credit the State of Louisiana should have available to it today would allow us to cost share approximately $1 billion worth of projects in partnership with the Corps on a 65-35% cost share basis. In order to free up these funds so that we can implement other large-scale ecosystem restoration under our Coastal Master Plan, we request that the Corps use a broader interpretation of "flood damage reduction project"

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[16] Water Resource Policies and Authorities Construction of Water Resource Development Projects by Non-Federal Interests (E.R. 1165-2-504) (12 July 2017), at ¶6(l)(4), *available at* http://cdm16021.contentdm.oclc.org/utils/getfile/collection/p16021coll9/id/72/filename/73.pdf

under Section 1014(b) of WRRDA 2014 to include certain ecosystem restoration projects so that the State of Louisiana may realize credits for the separable elements of those projects. This will allow the state to implement other large-scale ecosystem restoration projects much more quickly, thereby better protecting the citizens of our state on an even more urgent basis.

Issue: The Corps has not developed a process for transferring excess credit as required under Section 1019(b) of WRRDA 2014.

With regard to the Section 1019(b) cross crediting provisions, this section of WRRDA 2014 also provides that, within 90 days of enactment, the Secretary of the Army was to "establish, in coordination with any relevant Louisiana state agencies, a process for implementing the provisions dealing with the transfer of excess credit from one study or project to another study or project." Nevertheless, while the Corps has issued implementation guidance for WRRDA 2014 Section 1019[17], this guidance merely indicates that the Corps was to develop an overarching agreement that describes the process and requirements for cross crediting transfers "prior to the first transfer" rather than setting forth a process for transferring excess credit under Section 1019(b) as required under WRRDA 2014. Three years later no such agreement has been developed.

This implementation guidance also states that excess credit will only be considered toward another study or project authorized in Title VII of WRDA 2007 that involves the same sponsor. However, in practice the Corps has not provide a mechanism to accomplish this in spite of Section 1019 language and guidance that directs the Corps to develop a cross crediting plan. This has been further complicated by what appears to be difficulty within the Corps of being able to rectify how Section 1019 cross-crediting for Title VII of WRDA 2007 projects can be coordinated with possible crediting allowed generally for federal projects under Section 1020 of WRDA 2014. For example, the Corps has refused to provide credit against the state's payback for a portion of the Greater New Orleans Hurricane and Storm Damage Risk Reduction System (HSDRRS)[18] for repairs made to the Bayou Bienvenue vertical lift gate at the Inner Harbor Navigation Canal Surge Barrier (IHNC) resulting from a design deficiency in the Corps' design. This is so even though the IHNC is part of the Lake Pontchartrain and Vicinity (LPV) portion of HSDRRS under Title VII of

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[17] Implementation Guidance for Section 1019 of the Water Resources Reform and Development Act of 2014 (WRRDA 2014) – In-Kind Credit Authority (Feb. 2 2015), *available at* http://www.usace.army.mil/Missions/Civil-Works/Project-Planning/Legislative-Links/wrrda2014/wrrda2014_impguide/.

[18] For a complete list of HSDRRS projects, *please see* Section 7012 of WRRDA 2007 and the Corps' May 2017 HSDRRS Facts and Figures brochure, *available at* http://www.mvn.usace.army.mil/Portals/56/docs/HSDRRS/2USACE_TFH%20FF%20Brochure%20May%202017%20small.pdf.

WRDA 2007. It has been explained that the Corps has "no mechanism" to provide credits even though Section 1019 directs the Corps to come up with a cross-crediting plan. In particular, this has created problems where CPRA or its local entities have expended funds on repairing and correcting design and construction deficiencies, post turn-over, on portions of the HSDRRS projects that were funded at full federal expense. It would seem that cross-crediting is the perfect mechanism for apply credits for work done by a non-federal sponsor on a portion of a project for which it should have no financial responsibility. As a further example, it is also our understanding that expenses to be paid for repairs to address design and construction deficiencies by the Corps for the LPV, the Jefferson Parish Pump Station Storm Proofing, and the West Bank and Vicinity (WBV) project cannot be creditable to payments that Jefferson Parish is now making for the Southeast Louisiana (SELA) Drainage program, all of which are HSDRRS projects under Title VII of WRDA 2007.

Further complicating the issues, the Corps has indicated that CPRA should develop a separate Section 1020 plan for submission to the Corp on levee lifts for the LPV and WBV projects, indicating that the levee lifts are a separate authorization for the LPV and WBV projects even though such levee lifts are needed to keep the LPV and WBV projects at levels needed for National Flood Insurance Program (NFIP) standards and such authorization provides a 65% federal and 35% local sponsor cost share. In practice, this lack of clarity and inability to harmonize Section 1019 and 1020 has put CPRA in a conundrum of developing a Section 1020 plan on its own for both Section 1019 and Section 1020 projects or continuing to wait on the Corps to develop a Section 1019 plan that could help better guide CPRA on how it might incorporate other projects under a 1020 plan that would allow it to obtain credits for all work on current and authorized federal projects.

Finally, in May 2016, CPRA issued a formal request to the Corps for credit on the design and construction of four LCA projects for which it had executed MOUs with the Corps in order to implement five other LCA projects. More than one year later, CPRA has yet to receive confirmation of this request. This means that CPRA has undertaken work on the LCA projects at 100% cost to the State and we have not yet received credit for the Corps' 65% cost share

> ***Recommendation**: As required under Section 1019(b) of WRRDA 2014, the Corps should work with the State of Louisiana to establish a process for cross crediting.*

While some initial discussions have taken place, the State of Louisiana therefore requests that, as provided under Section 1019(b) of WRRDA 2014, that the Corps coordinate with us to establish a process through which we can transfer excess credit from one study or project to another study or project. Additionally, an effort should be made to harmonize

Section 1019 and Section 1020 of WRDA 2014 in order to provide the best coordination of crediting for all federally authorized projects within the coastal area of Louisiana. Such a process will help us free up funds to implement other integrated coastal protection projects that are a priority for our coast and the citizens who live, work and play on our coast, as well as the businesses that call our coast home.

III.Project Completion and Project Turnover Issues

Section 1010 of the Water Resources Reform and Development Act (WRRDA) of 2014 established a formal process for notification of project completeness, and a process for the non-federal sponsor to appeal determinations of project completeness. More specifically, this section provides that the Secretary of the Army "shall notify the applicable non-Federal interest when construction of a water resources project or a functional portion of the project is completed so the non-Federal interest may commence responsibilities, as applicable, for operating and maintaining the project." Section 1010 also provides that a non-Federal interest may appeal a completion determination within 7 days of receiving notice that the project is complete, which will trigger an independent review of project completeness.

The implementation guidance for Section 1010 of WRRDA 2014 provides additional information about how the Corps defines construction completeness and provides that:

> Construction of a water resources project, or a functional element thereof, is complete when physical construction is complete. Completion of physical construction does not include completion of any approved project monitoring, adaptive management, periodic renourishment, future levee raises or any other project aspect occurring after initial physical construction is complete.[19]

The Corps' Section 1010 implementation guidance also states that the Notice of Construction Completion (NCC) shall be issued in accordance with the executed Project Partnership Agreement (PPA).

> ***Issue: The Corps' project completion implementation guidance for Section 1010 of WRRDA 2014 is often not consistent with its PPAs or with its engineering regulations and it has failed to update its pre-Katrina project turnover guidance, all of which creates a significant potential for turnover of unsafe flood protection projects.***

[19] Implementation Guidance for Section 1010 of the Water Resources Reform and Development Act of 2014 (WRRDA 2014) – Determination of Project Completion (Jan. 30, 2015), *available at http://www.usace.army.mil/Missions/Civil-Works/Project-Planning/Legislative-Links/wrrda2014/wrrda2014_impguide/.*

The Corps' interpretation of what constitutes a completed project is one with which we have concerns. From our perspective, a project cannot be complete if it has design or construction defects *even if physical construction is complete* because a project cannot be both functional and defective. Limiting the statutory term to "physical construction" potentially ignores review of defects that could seriously impact the overall safety of projects and which should be addressed prior to project turn over for operation and maintenance. Such limitation harkens back to a pre-Katrina project turn-over mentality that was highly criticized in post-Katrina reviews and lessons learned. Specifically, we believe that Section 1010 guidance should reference broader project completion that includes design reviews rather than physical construction completion. Construction completion should include review of whether the physical construction was completed according to design as well as whether that design meets the project design criteria, including the design standard set forth in project cooperation agreements (PPA, CA, PCA, etc.) and Corps regulations and guidance. In fact, the intent of Section 1010 was to provide a non-federal sponsor a final formal and independent review of the Corps design and construction work before being made responsible for projects solely designed and constructed by the Corps.

Interestingly, even the Corps' PPAs support a more stringent test for when a NCC should be issued than does the Corps' WRRDA 2014 Section 1010 guidance. Article II.D. of the Corps' specific PPAs executed with the State of Louisiana for the HSDRRS projects instead provide that a NCC shall be issued when a project, or a functional portion of a project, is complete *and* meets the 100-year event design criteria – not simply when a project has reached "physical completion". Further, the Corps' own Engineering Regulations provide an even more stringent requirement than the PPAs for project completion to the extent the regulations state a policy that all design decisions will be "based on a minimum project service life of 100 years."[20]

The distinction between a 100-year event design criteria and a 100 year service life is important because the 100-year event design criteria refers to a standard required by the Federal Emergency Management Agency in order to be insurable under the National Flood Insurance Program, while the 100 year service life is a structural concept meaning that the project will remain in use to provide its intended function for a 100 years. However, despite the Corps' written policy, as provided in E.R. 1110-2-8159, that all design decisions will be based on a 100 year project service life, the Corps refuses to include that provision in its PPAs or use that in its decisions to issue NCCs. Likewise, the Corps also refuses to abide by the terms of its own standard PPAs which require more than "physical completion" for project turnover.

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[20] *See* Section 6(b) of the Corps' Engineering Regulation 1110-2-8159 (Oct. 31, 1997).

Adhering to the 100 year service life requirement is important because, for example, in the case of the St. Bernard T-Walls, the Corps' estimated corrosion rates of 0.47 mils per year (mpy) total (both sides) were much lower than the actual corrosion rates which have averaged between 3.814 and 4.483 mpy per side (7.628 to 8.966 mpy total).[21] This means that the project service life is significantly reduced from the 100 year standard and this occurred even though CPRA and the Southeast Flood Protection Authority-East (SLFPA-E) brought up multiple concerns related to project service life during the design and construction phases of this project. One major concern CPRA and SLFPA-E currently face about the corrosion rates is that this could eventually lead to failure of the flood protection system for three LPV projects – LPV projects 145, 146 and 148. As a practical matter, this means that the project has the potential of no longer meeting the 100-year event design criteria much sooner than the project should have been designed to last.

Importantly, even in light of Section 1010 of WRRDA 2014 and the engineering regulations that have been promulgated since that time, in practice, the Corps often still follows E.R. 1150-2-301 for project turnover – which is its outdated pre-Katrina guidance from 1967.[22] This is so even though the Corps has modified PPAs with the State of Louisiana to provide additional protections for project turnover in line with some of the post-Katrina legal and regulatory requirements and in spite of the procedure set forth in the guidance being highly criticized in Congressional committee hearings and reports issued following investigations and review of pre-Katrina practices. The Corps' failure to follow the provisions of Section 1010 of WRRDA 2014 and update this guidance from 1967 creates a significant potential for turnover of unsafe flood protection projects and the possibility of repeating failures identified by post-Katrina reviews of prior practices.

Furthermore, even where projects or portions of projects are not functionally complete, the Corps is still attempting to turnover projects in order to close out construction contracts and release contractors from particular contracts even though construction on other portions of a project needed to make the project as a whole are still ongoing. This then puts the non-federal sponsors in the situation of taking over operation and maintenance of a project that does not even meet the purpose for which it was intended. For instance, in the case of the Harahan Pump to the River project , the Corps submitted a NCC letter for two components of this project which the State is disputing because, at the

[21] Note that the maximum rates are even higher at individual locations ranging from 6.892 to 8.653 mpy per side (13.78 to 17.306 mpy total) during the same time frame.

[22] Policies and Procedures – Local Cooperation, E.R. 1150-2-3-1 (1 Sept. 1967), *available at* http://www.publications.usace.army.mil/Portals/76/Publications/EngineerRegulations/ER_1150-2-301.pdf?ver=2013-09-08-233441-493. Importantly, this guidance was updated through Change 1 to E.R. 1150-2-301 on January 15, 1970, but that is the last record of update that we were able to identify for E.R. 1150-2-301.

time the NCC letters were issued, these projects did not constitute completed functional portions of the Southeast Louisiana Urban Flood Control (SELA) Project under Title VII of WRDA 2007. This is because the items required to monitor and control operation of the pump station have not been completed. Additionally, the ability of the system to pump water out of the drainage basin was only tested under actual rain events a few days before CPRA received the NCC – and problems occurred. As such, CPRA's position was that these items, along with a list of more than 20 other items that the state felt should be addressed before project turnover, meant that the NCC letters did not meet the requirements for turning over "functional portions" of the SELA project. On August 31, 2017, CPRA formally requested an appeal of the completeness determination under Section 1010 of WRRDA 2014. This appeal is still pending.

> ***Recommendation**: That the Corps update its WRRDA 2014 Section 1010 implementation guidance to clarify that project completion determinations include evaluation of design and documentation concerns, as well as other concerns raised by non-federal sponsors, and to update its pre-Katrina Local Cooperation regulations.*

Accordingly, based on the language of Section 1010 of WRRDA 2014 and the language used by the Corps in its post-Katrina PPAs, the Corps' Section 1010 guidance should be updated to clarify that appeals of project turnover can be based on design and documentation concerns, as well as other matters that the non-Federal sponsor considers to be preventing a functional portion from being complete. The guidance should at the least allow the non-federal sponsor to provide its concerns to the third-party reviewer as part of Section 1010 review rather than allowing the Corps to make the decision as to what the reviewer sees and does not see. Secondly, one way to address design deficiencies would be to provide regulations that make the non-federal sponsors equal partners with the Corps in the administration of design of projects rather than having the Corps act as the sole administrator and allowing the Corps to incorporate non-federal sponsor comments and concerns at the Corps' discretion. The non-federal sponsors should have just as much ability to express concerns and provide direction during the design. Finally, we request that the Corps build in the 100 year service life requirement in its PPAs, as well as into the NCC and Section 1010 processes, as required by E.R. 1110-2-8159. Updates such as these will ensure that the Corps is not setting different standards between its guidance documents and its PPAs.

IV. Federal Responsibility for Operations and Maintenance
The Algiers Canal Example

There are also instances in which the Corps interprets various WRDA in an inconsistent manner and at time, against the clear intent of Congress. One example of this is the case of the operations and maintenance responsibility for the Algiers Channel/Canal in Louisiana, which is a discrete part of the larger West Bank & Vicinity (WBV) project.[23] On August 17, 1999, Congress enacted the Water Resource Development Act of 1999 (WRDA 1999), Public Law 106-53. Section 328 of WRDA 1999 provided that the federal government shall continue the operations and maintenance of the "Algiers Channel." On June 15, 2006, Congress passed the Emergency Supplemental Appropriations Act for Defense, The Global War on Terror, and Hurricane Recovery, Public Law 109-234, to appropriate funding for hurricane protection and to condition that funding on the non-federal sponsor contracting to assume 100% of the operations, maintenance, rehabilitation, repair, and replacement (OMRR&R) of the projects therein – including the WBV project.[24] Then, on November 8, 2007, Congress enacted Section 3084 of WRDA 2007, to amend Section 328 of WRDA 1999 and address Public Law 109-234, specifically to provide that ***the federal government shall continue the operations, maintenance, rehabilitation, repair, and replacement (OMRR&R) costs of the Algiers Canal levees.***[25] Seven months later, on June 30, 2008, Congress enacted Public Law 110-252, which provides, in pertinent part, for appropriation of additional funding conditioned upon the non-federal sponsor assuming 100% of the costs of OMRR&R of the relevant projects – including the WBV project.[26] Public Law 110-252 *does not* reference Section 328 of WRDA 2007.

> ***Issue: The Corps refuses to undertake its OMRR&R responsibilities for the Algiers Canal Levees as directed by Congress.***

Based on the language of WRDA 1999, as amended by WRDA 2007, the State of Louisiana's position is that Congress has made its intent very clear that the Corps is to be responsible for the OMRR&R of the portion of the WBV that constitute the Algiers Canal levees. Indeed, the Corps agreed that it was responsible for OMRR&R of the Algiers Canal levees as initially

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[23] Section 328 of WRDA 1999 clarifies that the projects authorized as part of the Westwego to Harvey Canal project, the East of Harvey Canal project, and the Lake Cataouatche modifications will be combined as a single project to be known as the "West Bank and Vicinity, New Orleans, Louisiana Hurricane Protection Project" (WBV project). The "Algiers Channel" is part of the project to prevent flood damage and for hurricane damage reduction on the west bank of the Mississippi River, East of Harvey Canal. Accordingly, the "Algiers Channel" is a distinct part of the larger WBV project.

[24] *See* 120 Stat. 455.

[25] Section 3084(1)(B) of WRDA 2007 changed the name "Algiers Channel" to "Algiers Canal Levees".

[26] *See* 122 Stat. 2350.

constructed. However, in June 2011, the Corps relied on guidance for Section 3084 of WRDA 2007[27] to inform the state that it was taking the position that it was ***not*** responsible for the OMRR&R of the Algiers Canal levees since they were a part of the enhanced WBV project provided for in Public Law 109-234, WRDA 2007, and Public Law 110-252. As such, the Corps argued that "***in accordance with the authorization of the enhanced WBV project, OMRR&R of the Algiers Canal Levees becomes a non-Federal responsibility upon completion of the WBV project***" (emphasis added). On May 16, 2016, the Corps again attempted to turnover responsibility for OMRRR of the Algiers Canal Levees to the State.

This is a nonsensical position for several reasons. First, Public Law 110-252 does not repeal or amend, explicitly or implicitly, Section 328 of WRDA 1999, as amended in 2007, which directs the Corps to "continue Federal operation and maintenance" of the portion of the project constituting the Algiers Canal.[28] Second, Public Law 110-252 is an appropriations law which provides even less basis for the Corps' position that it somehow repealed Section 328 of WRDA 2007.[29] Third, no other law repeals or amends, implicitly or explicitly, Section 328 of WRDA 1999, as amended in 2007, which directs the Corps to undertake operations and maintenance of the Algiers Canal levees. Instead, Congress was very clear and addressed precisely this issue when it unambiguously directed the Corps through Section 328 of WRDA 1999, as amended by Section 3084 of WRDA 2007, to undertake the OMRR&R of the Algiers Canal Levees[30].

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[27] Implementation Guidance for Section 3084 of the Water Resources Development Act of 2007 (WRDA 2007) – West Bank of the Mississippi River (East of Harvey Canal), Louisiana (May 12 2009), *available at* http://www.usace.army.mil/Portals/2/docs/civilworks/Project%20Planning/wrda/2007/wrda07_imp.pdf?ver=2017-04-17-101210-443.

[28] *Morton v. Mancari*, 417 U.S. 535, 549, 94 S.Ct. 2474, 2482, 41 L.Ed.2d 290 (1974) (repeals by implication are not favored); *Posadas v. National City Bank*, 296 U.S. 497, 503, 56 S.Ct. 349, 352, 80 L.Ed. 351 (1936) (find that "the intention of the legislature to repeal must be clear and manifest"); *United States v. Borden Co.*, 308 U.S. 188, 198-199, 60 S.Ct. 182, 188, 84 L.Ed. 181 (1939) (stating that "intention of the legislature to repeal must be clear and manifest and requires the showing of a positive repugnancy between the old and the new laws.")

[29] The doctrine disfavoring repeals by implication applies with full vigor and even greater force when the subsequent legislation is an *appropriations* measure. E.g., *Committee for Nuclear Responsibility v. Seaborg*, 149 U.S. App. D.C. 380, 382, 463 F.2d 783, 785 (1971); *Environmental Defense Fund v. Froehlke*, 473 F.2d 346, 355 (CA8 1972); *Tennessee Valley Auth. v. Hill*, 437 U.S. 153, 189-90, 98 S. Ct. 2279, 2299-300, 57 L. Ed. 2d 117 (1978). Further, if an appropriations bill changes existing law, any such change applies ***only to the fiscal year for which the bill was passed*** unless Congress clearly expresses a contrary intent. E.g., *United States v. Vulte*, 233 U.S. 509, 514-15 (1914); *United States v. Langston*, 118 U.S. 389, 394 (1886); *Atl. Fish Spotters Ass'n v. Evans*, 321 F.3d 220, 224 (1st Cir. 2003).

[30] *See* P.L. 110-252, 122 Stat. 2350.

***Recommendation*: That the Corps immediately undertake their Congressionally mandated OMRR&R responsibilities as directed by Congress rather than wrongfully requiring the State of Louisiana to undertake these responsibilities.**

Nonetheless, as an interim measure, CPRA has agreed to undertake OMRR&R of the Algiers Canal Levees while reserving all rights to be reimbursed for these costs by the Corps. CPRA has agreed to do this solely to protect the citizens and property within the State of Louisiana as a result of the Corps' refusal to fulfill its statutory duty as to OMR&R of the Algiers Canal Levees leaving the health, safety, welfare and property of the State's citizens at risk without local action. The sooner this issue can be resolved, the quicker the State can re-allocate those funds to other important integrated coastal protection projects.

V. Clarity on the Section 408 Process

The State of Louisiana has repeatedly asked for clarification on the Section 408 process under Section 14 of the Rivers and Harbors Act of 1899, as amended, and codified in 33 U.S.C. § 408.

***Issue*: The Corps guidance on the Section 408 Process expired at the end of September and there is no indication of when new guidance will be published.**

On July 31, 2014 USACE issued Engineer Circular (EC) 1165-2-216, Policy and Procedural Guidance for Processing Requests to Alter U.S. Army Corps of Engineers Civil Works Projects Pursuant to 33 U.S.C. § 408[31]. E.C. 1165-2-216 provides the requirements and procedures for an overall review process that can be tailored to the scope, scale, and complexity of individual proposed alternations, and provides infrastructure-specific considerations for dams, levees, floodwalls, flood risk management channels, and navigation projects. As drafted, this guidance was initially set to expire on September 30, 2015. It was then extended to September 30, 2017. This guidance has now expired and we have yet to have any indication of when the new guidance will be published.

***Recommendation*: That the Corps' updated Section 408 guidance will improve and streamline the process, provide consistency for each permit request, provide methods for expediting review making the process more efficient, provide the District Office more authority in permitting**

[31] E.C. 1165-2-216, Water Resources Policies and Authorities Policy and Procedural Guidance for Processing Requests to Alter Army Corps of Engineers Civil Works Projects Pursuant to 33 USC 408 (July 31, 2014), *available* at http://www.publications.usace.army.mil/Portals/76/Publications/EngineerCirculars/EC_1165-2-216.pdf?ver=2016-06-28-100552-103.

decisions, provide more clarity on what actions would trigger certain levels of review for each level of the Corps, and provide earlier stages of design reviews.

Since Governor Edwards has taken office, the Corps and CRPA have made significant progress in reviewing/approving Section 408s, as provided in the current guidance, namely those for LA Hwy 1 and 18 levee lifts by local non-Federal sponsors. While progress is being made on this issue, it is our hope that the updated guidance will improve and streamline the process and provide consistency for each permit request. Additionally, we request that this guidance provide methods for expediting review making the process more efficient, while at the same time communicating a clear and concise process which would result in the state, local parishes and levee districts having a clear understanding of the process. The CPRA also requests Corps Headquarters delegate more authority in permitting decision process down to the Corps District office New Orleans and clarify what actions would trigger certain levels of review (i.e. District, Division or Headquarters) within the Corps. Finally, we also request that the Corps provide earlier stages of design reviews.

VI. Section 214 Agreements

Section 214 of the Water Resources Development Act of 2000 (WRDA 2000, Public Law No. 106-541), as amended, allows the Corps to accept funds from non-federal public entities to expedite review of their permit applications.

Issue: The State of Louisiana has recently been informed that the Corps is going to start requiring 214 Agreements for every permit application.

While the 214 process is designed to expedite certain permits, the State of Louisiana has recently been informed that the Corps is going to start requiring 214 Agreements for every permit application. Such a requirement would defeat the very purpose of having an expedited review arrangement and would result in a situation where a permit applicant would be required to pay extra fees for usual processes and regardless of the priority assigned to its project. This is not the type of arrangement contemplated by Section 214 of WRDA 2000, as amended and we believe is not in accord with Congressional intent.

Recommendation: That the Corps use the 214 Agreements as required by law to expedite the evaluation of permits for eligible entities that provide funds in exchange for the prioritization of their permit evaluation.

The State of Louisiana requests that the Corps use the 214 Agreements as required by law to expedite the evaluation of permits for eligible entities that provide funds in exchange for

the prioritization of their permit evaluation. Nowhere in the law is there a provision that requires an entity to pay the Corps a premium for every permit evaluation.

VII. Unpublished Regulations

The Corps routinely points to unpublished materials as Corps policy or requirements to which entities such as the State of Louisiana must adhere but which the public never had the opportunity to comment and which are not even publicly available. One such example is the State of Louisiana's single state entity guidance.

> ***Issue*: The Corps has not published single state entity implementation guidance as required by P.L. 109-148 passed in 2006 and guidance for WRRDA 2014 and WRDA 2016 are incomplete.**

In 2006, Congress passed P.L. 109-148, which required State of Louisiana to "establish a single state or quasi-state entity to act as local sponsor for construction, operation and maintenance of all of the hurricane, storm damage reduction and flood control projects in the greater New Orleans and southeast Louisiana area."[32] In 2009, the Louisiana Legislature passed Act 523, codified at La. R.S. 49:214.1(F), establishing CPRA as the single state entity. On February 1, 2010, the New Orleans District issued a revised document proposing policy recommendations for the purpose of issuing implementation guidance to the New Orleans District relative to the requirement for CPRA to act as the single state entity non-Federal sponsor for all hurricane storm damage reduction and flood damage reduction projects in the greater New Orleans and Southeast Louisiana area. On February 10, 2010, Brigadier General Walsh submitted that proposed policy documentation to Corps Headquarters and requested that the documents be processed to the Assistant Secretary of the Army for Civil Works "for the purpose of issuing formal guidance as to the single state entity serving as the non-Federal sponsor for the State of Louisiana in accordance with Congressional direction.

On June 3, 2010, the State of Louisiana requested a legal opinion from the Corps as to the geographic scope and duration of the applicability of this "single state entity" provision. On August 13, 2010, Assistant Secretary Darcy sent a letter to the State with an interpretation of the statute that "has been adopted and provided as guidance to the Corps." On August 30, 2010, Steven L. Stockton, Director of Civil Works at Corps Headquarters sent the Mississippi Valley Division a memorandum referencing the February 10, 2010 memorandum and identified its concurrence and disagreement with the policy recommendations. On September 9, 2010, the Mississippi Valley Division sent a

[32] Department of Defense, Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico, and Pandemic Influenza Act, 2006, P.L. 109-148, 119 Stat. 2761 (109th Congress).

memorandum to the New Orleans District indicating that the August 30, 2010 memorandum provides Corps Headquarters' policy determination in response to the New Orleans District's recommendations regarding the statutory requirement for the State of Louisiana to establish a single state entity. However, to date, ***eleven years*** after PL 109-148 was passed, no implementation guidance has been issued on this matter.

> ***Recommendation: That the Corps prioritize implementation of the single state entity guidance, as well as its implementation guidance for WRRDA 2014 and WRDA 2016.***

Likewise, Corps guidance for WRDA 2014 and 2016 remain incomplete. We are now three years out from WRDA 2014 and nine months out from WRDA 2016, yet nearly 9% of WRRDA 2014 guidance is incomplete and approximately 33% of WRDA 2016 guidance is incomplete. We therefore request that the Corps prioritize the development of this guidance. Additionally, with regard to the WRRDA 2014 guidance, we ask that the Corps establish a process by which it will address the concerns set forth by stakeholders during the listening sessions so that we can know when those concerns have been addressed and the manner in which they have been addressed.

VIII. Auditing Issues

In CWPRRA agreements CPRA has entered into with NRCS, USGS, EPA and USFWS, all of the agreements contain the following provisions under articles usually entitled "State Review of Records":

> CPRA shall have the right to conduct an audit, when appropriate, of [federal agency]'s records for the Project to ascertain the reasonableness and allowability of its costs for inclusion as credit against the federal share of Project costs.

Each agreement also has a reciprocal agreement for the pertinent federal sponsoring agency as to the State's records. Requests were made to include similar language in CPRA's Tebo Point CWPPRA agreement with the Corps, but were rejected in several proposed formats, including one version that would have allowed the other federal agencies to resolve any disputes as to the reasonableness and allowability of the costs.[33] Interestingly,

[33] The proposed language intended to address concerns that State would be directing the use of federal funds read as follows: "The Non-Federal Sponsor shall have the right to conduct an audit, when appropriate, of the Government's records for the *Project.* Should the Non-Federal Sponsor find need to question the reasonableness and allowability of a Governmental cost for inclusion as credit against the non-federal share of the *total Project costs,* the Non-Federal Sponsor may request that the other federal agency members of the CWPPRA Task Force review such costs and ascertain the reasonableness and allowability of its costs for inclusion as credit against the non-federal share

during the Tebo Point negotiations in which the State requested such auditing clause, the Corps added language that provided more stringent conditions and obligations upon the State in regard to documentation it would need to provide in order to obtain credit for work completed on the project by the State. This more stringent language was later incorporated into the LCA-6 Design Agreement.[34]

> ***Issue: The Corps has refused to allow the State of Louisiana to audit its records for cost-shared projects in accordance with Section 1012(a) of WRRDA 2014 even though audits are required under state law and the Corps has agreed to permit other states to audit its records.***

The Corps has repeatedly indicated that "long standing policy" prohibits state auditing of their records and more particularly, allowing the local sponsor to determine "reasonableness and allowability" of its expenses.[35] However, it is important to note that CPRA has not requested any sort of veto of costs, but is simply requesting the right to audit in order to determine the reasonableness, allocability, and allowability of the costs. Such auditing right is reasonable clause generally included in any type of joint venture agreement, whether between two private or governmental parties.

The Corps' position on this matter with respect to projects in Louisiana is further confounding given that there are auditing provisions in the design agreement signed by the Corps on the Florida Everglades projects. In Article XI, Paragraph A of Everglades Master Agreement for Construction and OMRR&R signed by Corps in August 2009, the parties included the following language:

> To the extent permitted under applicable Federal laws and regulations and State laws and regulations, the Government and the Non-Federal Sponsor shall each allow the other to inspect such books, documents, records, and other evidence and to conduct audits.[36]

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of *total Project costs.* The Corps and the Non-Federal Sponsor shall be bound by the decision of the other federal agency members of the CWPPRA Task force."

[34] The State did not object to these additional conditions. However, it was very concerning to us that the Corps was increasing the State documentation and obligations for its credit submission while at the same time refusing to allow the State the ability to conduct any audit whatsoever.

[35] We have also been told at times that such a provision would violate the Appropriations and Appointments clauses of the U.S. Constitution.

[36] Master Agreement between the Department of the Army and South Florida Water Management District for Cooperation in Constructing and Operating, Maintaining, Repairing, Replacing, and Rehabilitation Projects Authorized to be Undertaken Pursuant to the Comprehensive Everglades Restoration Plan (Aug. 13, 2009), *available at* http://141.232.10.32/pm/pm_docs/master_agreement/081309_master_agreement_cerp.pdf.

This language is quite similar to that included in the CWPRRA agreements except that it does not provide the ability to check the "reasonableness and allowability" of costs relative to the federal cost share for the project. Presumably, this would be the purpose of conducting the audit. The State requested similar language which combined the Everglades agreement language and the CWPRRA agreement language in the LCA-06 agreement but it was rejected in its entirety and we were informed at the time that the Mississippi Valley Division "is not familiar with the Everglades Agreement."

Section 1012(a) of WRRDA 2014 addresses some of the concerns we have with respect to auditing and provides for transparency in accounting and administrative expenses and provides that on the "request of a non-Federal interest, the Secretary shall provide to the non-Federal interest a detailed accounting of the Federal expenses associated with a water resources project." On February 22, 2016, the Corps also issued guidance stating that in accordance with Section 1012(a) of WRRDA 2014, and consistent with the terms of the PPA for the project, if the non-federal sponsor requests a detailed accounting of the Federal expenses associated with the project, the District Commander shall provide that accounting.[37]

Allowing mutual auditing with the Corps that would allow review for reasonableness and allowability is also important to CPRA because any costs not to this standard could potentially be considered a prohibited donation of funds under La. Const. Article 7 Section 14. This is separate from the question of whether inclusion of unreasonable and unallowable costs is a violation of federal law resulting in an act exceeding the authorization for the project. Audits are also required under state law by La. R.S. 39:1622 and appear to be applicable since 35% of all dollars spent on LCA projects, and 15% of all dollars spent on CWPPRA projects are considered to be state expenditures rather than federal expenditures. As a general principle, all Louisiana agencies are obligated to allow audits of expenditures of state dollars in their own accord as well as by the Legislative Auditor, the Division of Administration, and the Inspector General's office.

The State of Louisiana has requested such an accounting, both for the LCA program and the CWPPRA program, but the Corps has thus far refused to provide detailed information for either program to allow the state to properly audit expenditures for projects. This is true even though CPRA has to put up 15% of the funds for CWPPRA projects, and 35% of the funds for the LCA projects. Instead, the Corps appears to have taken the position that the funds CPRA has to put forth as a cost share somehow become federal funds and are therefore not subject to an audit. If this was even a tenable position, why would Congress

[37] Implementation Guidance for Section 1012 of the Water Resources Reform and Development Act of 2014 – Transparency in Accounting and Administrative Expenses (Feb. 22, 2015), *available at* http://www.usace.army.mil/Missions/Civil-Works/Project-Planning/Legislative-Links/wrrda2014/wrrda2014_impguide/.

include specific auditing provisions in WRRDA 2014? And, why would the Corps seemingly make no change in its policy or guidance in regard to allowing audits to be conducted by the state and allow full access to Corps records to enable such audits of state and federal dollars?

> ***Recommendation**: That the Corps allow CPRA the same ability to audit its records as the Corps has required of CPRA.*

In any event, CPRA is simply requesting the same ability to audit the Corps as the Corps has in its agreement with the State and as required under Section 1012(a) of WRRDA 2014 and its associated implementation guidance. In particular, Corps contracts contain numerous provisions that allow it to review the items that the state submits for crediting, and gives the Corps wide discretion to reject items for credit which it deems not "reasonable" or "allowable" expenses. The State, however, is given no such rights.

Conclusion

The State of Louisiana remains committed to a partnership with the United States Army Corps of Engineers that is strong, productive, and an excellent example of what can be accomplished when our agencies work together to achieve a legacy of lasting resiliency. We remain committed to using every option available to us to ensure that our priority integrated coastal protection projects are implemented quickly and efficiently and we greatly appreciate your time and attention to these issues in response to the Corps' request for comments. The strength of our partnership is absolutely critical to our coastal program, to the citizens and industries along our coast, and to the nation that relies on the health and sustainability of Louisiana's coast.

We thank you again for allowing us the opportunity to comment on these regulations and look forward to your response to the comments we have raised in this letter.

Sincerely,

Johnny B. Bradberry
Chairman, Coastal Protection and Restoration Authority Board

State of Louisiana Coastal Protection and Restoration Authority White Paper:

Environmental Review and Permitting Process Challenges for Louisiana's Coastal Program

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Executive Summary

The State of Louisiana, acting through the Coastal Protection and Restoration Authority (CPRA), requests that the Administration expedite permitting for critical infrastructure projects that help restore Louisiana's coastal ecosystem. Many of the projects do not need federal funds, will soon be ready to begin construction, and will stem the loss of Louisiana's coastal wetlands – a loss that our Governor has declared to be an emergency situation threatening U.S. national interests in energy production, wetland protection, maritime commerce and other economic and ecological issue areas.

With significant funding already in place and unanimous state legislative approval, the restoration projects included in Louisiana's Coastal Master Plan provide an ideal platform for this Administration to demonstrate how improvements to the environmental review and permitting process can prevent well-intentioned environmental protection laws from delaying projects designed to restore ongoing environmental losses.

Louisiana is Facing a Coastal Crisis, and Time is of the Essence

The State of Louisiana loses an unprecedented amount of land to coastal erosion every year. Since the 1930's, Louisiana has lost approximately 2,000 square miles of land to coastal erosion, a loss that is continuing at the rate of a football field of coastline lost every hour. No other state is facing such dramatic coastal land loss.

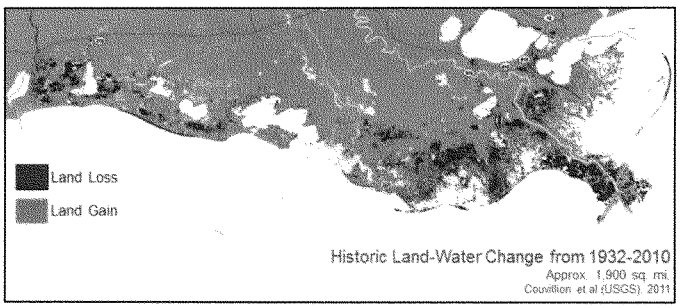

Figure 1: Historic Land-Water Change from 1932-2010.

The loss of Louisiana's coastal wetlands is a national crisis. The impacted area is home to half of the country's oil refineries and pipelines serving 90 percent of the nation's offshore energy production. Louisiana ships the most cargo in the nation along the Mississippi River and its waterways. Louisiana's wetlands today represent about 40 percent of the wetlands in the continental United States. Louisiana is also home to the most productive fisheries in the continental United States.

This land loss is ongoing and increasing. Without intervention, Louisiana's coastal estuaries will face collapse in the next 50 years, losing up to 4,000 additional square miles of wetlands. Likewise, this land loss will exacerbate flood damage, putting lives at risk and causing damage to billions of dollars of economic assets on an annual basis over the next 50 years.

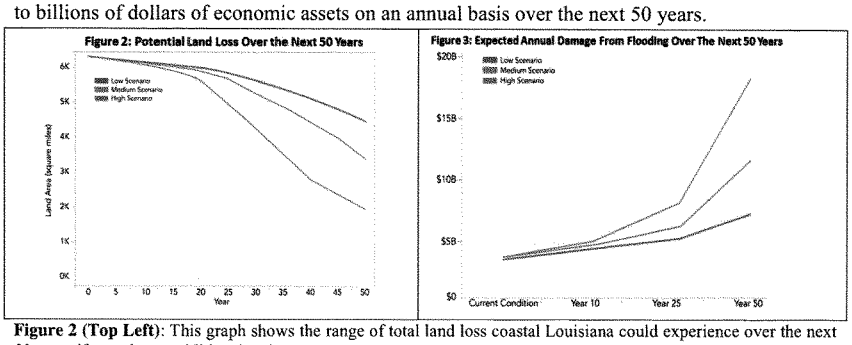

Figure 2 (Top Left): This graph shows the range of total land loss coastal Louisiana could experience over the next 50 years if we take no additional action.

Figure 3 (Top Right): This graph shows the range of direct economic damage from flooding coastal Louisiana could experience over the next 50 years if we take no additional action. Expected annual damage under initial conditions is ~$2.7 billion. In 50 years, coast wide expected annual damage could reach ~$6.7 billion under the Low Scenario, $12 billion under the Medium Scenario, and $19.9 billion under the High Scenario.

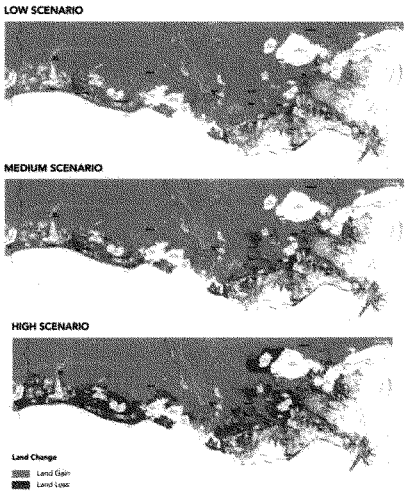

Figure 4: Shown above is land change 50 years from now under the Low, Medium, and High Environmental Scenarios if we take no additional action. Red indicates areas predicted to be lost, and green indicates areas where land would be created.

While there are many causes of this ongoing loss of coastal wetlands, two of the most significant are the construction of the Mississippi River levee system that began in the 1930's and the construction of canals through the wetlands to increase access for hydrocarbon exploration and commercial and recreational boat traffic. The massive Mississippi River levee system has virtually eliminated the introduction of river sediments to Louisiana's estuaries, instead discharging those sediments from the River mouth into the open water of the Gulf of Mexico. Canals have enabled salt water from the Gulf of Mexico to intrude into brackish and freshwater wetlands, resulting in the loss of the vegetation that helps to hold those marsh areas in place.

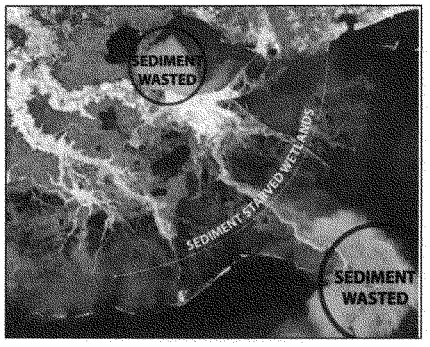

Figure 5: Satellite Photo of the 2011 Floods showing the sediment plume released from the Mississippi River into the Gulf of Mexico and Lake Pontchartrain rather than into the sediment-starved wetlands in Barataria Basin and Breton Sound.

Louisiana's Response: the Coastal Master Plan

Earlier this month, the Louisiana legislature unanimously approved Louisiana's 2017 Coastal Master Plan, the second revision of a 50 year, $50 billion plan to restore Louisiana's coast and protect the State against hurricane storm surge. Completion of the projects in the plan would add or maintain over 800 square miles of coastal land and wetlands, compared to a future where no projects are built. By 2067 the projects in the plan would reduce flood damage by $150 billion.

While not all of the projects in the plan are fully funded, we have secured approximately $11.4 billion for our Coastal Master Plan over the next 15 years. This includes the Gulf of Mexico Energy Security Act of 2006 (GOMESA), a funding steam we are relying on to support our coastal program going forward. In 2006, the people of Louisiana adopted a constitutional amendment that committed all revenues received by Louisiana from federal oil and gas development offshore to the restoration and protection of the Louisiana coast. None of these funding sources are federal tax funds or ratepayer funds.

The Challenge: The Federal Permitting Process

While Louisiana stands ready to commit significant funding to restoring its coastline, the federal permitting process for coastal restoration projects presents major delays in project implementation. The proposed Mid-Barataria Sediment Diversion provides a good example of this challenge.

The scientific community, various environmental organizations, and the citizens of Louisiana agree that the best approach to saving and restoring Louisiana's coastal wetlands is to reintroduce sediment-laden waters from the Mississippi River into Louisiana's sediment starved estuaries. The Mid-Barataria Sediment Diversion is intended to re-establish a connection between the Mississippi River and Barataria Basin, thereby restoring a river/estuarine connection that mimics historic land building processes in the Basin. Barataria Basin was the coastal area most heavily impacted by the *Deepwater Horizon* oil spill, a disaster that significantly exacerbated the already dramatic land loss in that region. The Mid-Barataria Sediment Diversion is a critical step toward sustainably restoring those lost wetlands and protecting tens of thousands of acres of land.

Louisiana is not seeking new funding to construct the Mid-Barataria Sediment Diversion. Rather, the State is working with numerous federal agencies toward using BP settlement funds to construct the diversion. However, even though we have the funding to move these projects forward, we nevertheless have serious concerns that the federal process will slow our projects down.

In January, the White House Federal Permitting Improvement Steering Council approved the Mid-Barataria Sediment Diversion for inclusion on the FAST-41 Dashboard. Louisiana believed that the inclusion of the Mid-Barataria Sediment Diversion on the FAST-41 Dashboard was a significant achievement that would significantly expedite the permitting timeline for the project. Indeed, the State is collaborating well with the federal permitting agencies in the regulatory process. However, the FAST-41 Dashboard Coordinated Project Plan ("CPP") timeline ultimately adopted shows the permits issuing on October 31, 2022, approximately one year longer than expected. During that additional time, critical wetlands will be lost in Barataria Basin, significantly increasing the restoration needs for the Basin. And this assumes that no other natural or man-made disaster intervenes to accelerate such loss. It is unreasonable, unwarranted, and unacceptable for the people of Louisiana to be subjected to a prolonged permitting process for a key state-approved restoration project, which does not use federal funds.

The Solution: Revising the Permitting Approach to Large Scale Restoration Projects

The State of Louisiana supports and values the federal environmental review and permitting processes. However, the State has also learned that certain aspects of those existing processes make it difficult in some cases to quickly obtain regulatory approvals. In practice, these various

regulatory schemes evaluate the impacts of restoration projects using the same approach as they do when evaluating private development projects. They evaluate the impacts against current conditions, focusing on short term impacts, rather than long-term benefits and historic ongoing damages. However, large-scale estuarine restoration projects, like those included in Louisiana's Coastal Master Plan, are precisely designed to change existing conditions, because existing conditions represent an ongoing degradation of the environment. Thus, regulators' focus on reducing short-term environmental impacts to maintain pre-project conditions is inconsistent with the very purpose of many of our coastal restoration efforts.

In addition, each federal agency has jurisdiction over different natural resources, requiring each agency to view a project through the lens of a different resource. This makes it difficult for the Federal Government, as a whole, to evaluate the beneficial impacts of a federal action on a large-scale ecosystem basis, rather than on the scale of individual, siloed natural resources.

Louisiana believes that these concerns can be addressed under the existing regulatory regime. Ideally, when a major ecosystem restoration project involving actions from multiple federal agencies is proposed, front-end coordination through centralized, executive-level leadership could be used to guide and direct the various agencies toward a comprehensive and focused goal of efficient analysis and, ultimately, implementation. However, that efficiency has proven elusive. Louisiana would therefore like to explore potential avenues for modifying the existing regime as it applies to large scale ecological restoration projects.

The State of Louisiana urges the Administration to use all of the tools within its authority to provide executive-level leadership to expedite permitting of Louisiana's critical coastal restoration projects, including issuing an order declaring a national emergency for the Louisiana coast. The State is open to any and all potential solutions, from enhanced collaboration and coordination under existing laws and regulations, to modifying executive agency statutory interpretations that present roadblocks to expedited permitting, to legislative changes to address these critical projects.

State of Louisiana Coastal Protection and Restoration Authority White Paper: Environmental Review and Permitting Process Challenges for Louisiana's Coastal Program

Introduction

As follow up to transmittal to the President of Emergency Proclamation No. 43 JBE 2017 issued by Governor John Bel Edwards on April 18, 2017, declaring a state of crisis and emergency in coastal Louisiana, the purpose of this White Paper is to raise awareness to the highest level of government of the significant challenges faced by the State of Louisiana in its efforts to expedite the implementation of five of our largest scale integrated coastal protection (ICP) infrastructure projects (Priority ICP projects). These Priority ICP projects include: Mid-Barataria Sediment Diversion, Mid-Breton Sediment Diversion, Houma Navigation Canal Lock Complex, Calcasieu Ship Channel Salinity Control Measures, and the River Reintroduction into Maurepas Swamp. (*See* Appendix A, Priority ICP project fact sheets). These projects have been subjected to rigorous scientific modeling and are located in areas of critical need across Louisiana's coast. While much of the needed funding has been identified, the environmental review and permitting process remains the last significant hurdle to implementing these projects in a timely manner.

The costs of any delay to the implementation of the Priority ICP projects are significant, both in terms of dollars and the protection these projects can provide to Louisiana's citizens, as well as the coastal industries and infrastructure on which the nation relies.[1] Louisiana could lose up to 4,000 square miles of coast if nothing is done[2]; meanwhile, the cost per acre to rebuild marsh more than doubles over 20 years.[3] Through flooding, hurricanes, and man-made disasters, our citizens continue to witness the disappearance of their property, livelihoods, well-being, and safety. Louisiana and the nation cannot afford to wait.

The State of Louisiana has been working diligently to address obstacles to the expeditious implementation of our Priority ICPs at the state and federal levels. Our biggest challenge has been the environmental review and permitting processes, which although based on strong policy,

[1] Louisiana's coast is home to more than 2.5 million people, or more than half of the state's total population. This fragile coastal ecosystem provides protection for infrastructure that services 90% of the Gulf's deepwater oil production, 20% of the nation's annual waterborne commerce, 26% (by weight) of the continental U.S. commercial fisheries landings, and winter habitat for five million migratory waterfowl. Louisiana, which has some of the highest rates of land loss in the world, has already lost at least 1,900 square miles of land over the past 80 years, and predictions show that if we do nothing, we stand to lose twice that amount of land over the next 50 years. Saltwater intrusion and reduced sediment flow from the Mississippi River and its tributaries are two of the primary causes for this land loss. Our Priority ICP projects are designed to specifically address these issues.

[2] In the lowest sea level rise scenario, the combined subsidence and sea level rise estimate is almost 1 ½ feet by 2067; the moderate scenario estimate is approximately 2 feet by 2067 and the high scenario is approximately 2.7 feet by 2067. *See* CPRA Coastal Master Plan at Appendix C, Ch. 4 pp. 137 & 143.

[3] For the lowest sea level rise scenario, the cost per acre to rebuild marsh increases more than 100%. For the medium scenario, the cost per acre created increases almost 200% in 20 years and more than 600% in 40 years at 2% inflation. *See* The Water Institute of the Gulf (2016). Future Costs of Marsh Creation Projects in Coastal Louisiana Summary of Methodology. Baton Rouge, LA.

are often implemented inefficiently resulting in significant delay, unpredictable decisions, and limited accountability. We need assistance to streamline these processes and find efficiencies that will allow the State to move ahead now to provide a safer and more resilient coast for our citizens and the nation. Stronger state and federal collaboration will ensure the continued success of Louisiana's coastal program and fully meet the goals of the nation's environmental policy.

Louisiana's Coastal Master Plan and Coastal Program

After the devastation of Hurricanes Katrina and Rita in 2005, the Federal Government agreed to focus attention and money on Louisiana's coastal crisis, provided that the state met certain requirements. Instead of dealing with a myriad of state agencies, the Federal Government required Louisiana to establish one central authority that would represent the state, speak with one clear voice for the future of Louisiana's coast, be accountable for oversight of all activities and funds relative to coastal restoration and hurricane protection, and develop a coordinated plan of action with clear goals and achievable objectives. Louisiana responded by creating the Coastal Protection and Restoration Authority (CPRA) and *Louisiana's Comprehensive Master Plan for a Sustainable Coast* (Coastal Master Plan). (*See* Appendix B, 2017 Coastal Master Plan).[4]

This model has served Louisiana well and has greatly streamlined our ability to work with the Federal Government. Most importantly, this model has generated our Coastal Master Plan, the State's 50-year, $50 billion plan to restore and protect our coast which is based on strong science and extensive public input. Nowhere in the nation is there a region that simultaneously offers globally critical habitat and the breadth of economic assets found in coastal Louisiana. Moreover, unlike other areas of the nation that will face similar challenges, we have freshwater and sediment from the Mississippi and Atchafalaya Rivers, which are essential tools in our toolkit that we can leverage in our fight against encroaching seas. We also have a comprehensive plan to implement these tools.

With our Coastal Master Plan, which is one of the biggest coastal restoration plans in the world, we can build or maintain more than 800 square miles of land[5] and reduce flood damage by $150 billion over the next 50 years. (*See* Appendix C for a map of what our Coastal Master Plan delivers). We have done a lot of the work ourselves, but we cannot implement our plan alone. To

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[4] A comprehensive electronic version of the 2017 Coastal Master Plan, with appendices, is available *at* http://coastal.la.gov/our-plan/2017-coastal-master-plan/.

[5] Between 1932 and 2010, Louisiana's coast lost more than 1,800 square miles of land. *See* 2017 Coastal Master Plan Executive Summary, p. ES-2. From 2004 through 2008 alone, more than 300 square miles of marshland were lost to Hurricanes Katrina, Rita, Gustav, and Ike. *Id.* As explained in our Coastal Master Plan Brochure, "CPRA's goal is not, and has never been, to rebuild the coast of the 1930s or to maintain our current coastal footprint. We know that is not feasible. The 2017 Coastal Master Plan recommends a diversity of projects to build land and reduce flood risk in order to balance short-term needs with long-term goals. The reality is that this plan will not solve all the challenges facing coastal Louisiana. It will take an unprecedented effort by government, the private sector, and coastal communities to improve the sustainability of our coast. However, Louisiana's people are resilient, and we are up to the challenge." *See* 2017 Coastal Master Plan Brochure, p. 2, *available at* http://coastal.la.gov/wp-content/uploads/2016/08/2017-Draft-Master-Plan-Brochure-Final_For-Print.pdf.

accomplish our goals, we need the Federal Government as a partner to get our largest scale projects on the ground. We have the funds and the sediment, but need the Federal Government's help to ease the regulatory burden and shorten the permitting timeframes.

We have secured approximately $11.4 billion for our Coastal Master Plan for the next 15 years. This includes the Gulf of Mexico Energy Security Act of 2006 (GOMESA), a funding stream we are relying on to support our coastal program going forward. In 2006, the State of Louisiana passed a constitutional amendment to protect the GOMESA funds and ensure that they go towards integrated coastal restoration projects. This also includes more than $7 billion coming to us over the next 15 years for coastal projects as a result of the *Deepwater Horizon* oil spill settlement. Accordingly, we have largely secured the funds we need to implement our current list of Priority ICP projects.

We also have abundant sediment, the single most important resource needed to rebuild and maintain our wetlands. The Mississippi and Atchafalaya Rivers are key sediment sources, and we have developed methods to capture valuable sediment in sustainable and cost-effective ways. With funding secured and sediment available, our single biggest challenge to implementation of our largest scale projects is man-made – delays from complicated and inefficient environmental review and permitting processes.

The State of Louisiana continuously strives to expedite implementation of its Priority ICP projects at the state level by pursuing legislative updates to state law, implementing new forms of contracting, and maximizing funding for its coastal program. However, the identification and use of federal-level efficiencies is vital for Louisiana to "turn dirt" quickly. Moreover, the scale and amount of ecosystem restoration projects in the Gulf of Mexico region related to the *Deepwater Horizon* oil spill recovery effort over the next 5-15 years will put further strain on federal resources, potentially protracting the permitting and regulatory timeline of the Priority ICPs.

Assumptions and Alternatives within the Environmental and Regulatory Reviews

The environmental legal frameworks and processes within which the State and Federal Government must work to implement our Priority ICP projects have the capability to address complex ecosystem restoration projects with large-scale geographic benefits. For instance, the overall flexibility of the frameworks should make it easier to accomplish the objectives of environmental review and permitting in a timely manner; however, this has proven to be a challenging proposition in practice. Therefore, while we certainly support and value the environmental review and permitting processes, we also appreciate that there are certain aspects of the existing frameworks that make it difficult for our federal partners to maximize efficiencies in some cases.

First, the existing legal frameworks treat environmental restoration projects in much the same manner as industrial development projects. Although Louisiana needs both, there is obvious merit to expediting the review processes and simplifying the review criteria for restoration projects. In fact, the current system has at times made it *easier* to permit those projects that may create adverse environmental consequences than those that restore the damaged environment.[6]

Second, large complex restoration projects often involve numerous federal agencies with divergent missions. Each agency evaluates the restoration project through its particular lens. Consequently, this makes it difficult for the Federal Government to recognize and evaluate the beneficial impacts of restoration projects on a large-scale ecosystem basis. These issues are particularly apparent in the National Environmental Policy Act (NEPA) process. Under NEPA's implementing regulations, the purpose of an Environmental Impact Statement (EIS) is to inform decision makers and the public about the environmental effects of a proposed project and reasonable alternatives that would "avoid or minimize adverse impacts or enhance the quality of the human environment."[7]

The NEPA process supports the laudable goal of ensuring that the environmental impacts of Federal actions are fully taken into account. One mismatch between the standard NEPA process and restoration projects, however, concerns the environmental baseline. The NEPA implementing regulations start from the premise that current conditions are the appropriate baseline against which to evaluate a project's environmental impacts. In the case of Louisiana's ecosystem restoration efforts, our baseline conditions are dynamic and change on a daily basis. More importantly, our goal is to improve and restore conditions as compared to current conditions. Our Priority ICPs are specifically designed to restore environmental conditions over the long-term by restoring natural processes. Therefore, to the extent NEPA is interpreted by regulators to focus on the short-term maintenance of pre-project baseline conditions, this presents challenges to the very purpose of many of our coastal restoration efforts.[8]

Potential for Multiple Environmental Impact Statements

Given the number of different federal approvals that can be required for a single project, it is also possible for a project proponent to be faced with the daunting task of preparing multiple EISs for a single project. Although CPRA is working with all interested Federal agencies to avert this

[6] That was the case with *Deepwater Horizon*, which benefited from a NEPA categorical exclusion, while CPRA's proposed Mid-Barataria Sediment Diversion Project ("MBSD"), which is designed to restore for the damage caused by the oil spill, has the potential under the current system to become bogged down in years of environmental and regulatory review.

[7] *See* 40 C.F.R. § 1502.1.

[8] Given the language of NEPA and its implementing regulations that a detailed environmental statement should include information about "the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity", the statutory language of NEPA should be able to account for long-term environmental benefits. 42 U.S.C. § 4332(C); 40 C.F.R. § 1502.16. However, in practice, the agencies are often reluctant to fully take into account long-term environmental benefits or the damages being repaired.

outcome regarding the MBSD project, for nearly a year it appeared likely that the Army Corps of Engineers ("Corps") and the National Oceanic and Atmospheric Administration ("NOAA") could require separate EISs for the project, even though the adoption of one federal agency's EIS, or a portion of that EIS, by another federal agency is an efficiency provided by the White House Council on Environmental Quality's (CEQ) NEPA Regulations.[9] The potential of multiple EISs highlights the challenges of trying to implement large scale ecosystem restoration projects in a framework that was intended to protect the environment but is implemented in a way that *encourages but does not require* federal agencies, or even different bureaus within a federal agency, to fully coordinate with each other on environmental policy or to take a step back from their own particular areas of focus to look at the larger ecosystem that might be impacted by a given federal action.

Reconciling NEPA Alternatives and the Corps' 404(b)(1) alternatives analysis

We have also encountered confusion and delay surrounding the different alternative analyses processes mandated by NEPA on the one hand, and the Corps' 404(b)(1) alternatives requirements on the other. Section 1505.2(b) of NEPA's implementing regulations requires that, in cases where an EIS has been prepared, the Record of Decision identify all alternatives that were considered, "specifying the alternative or alternatives which were considered to be environmentally preferable." The environmentally preferable alternative usually means the alternative that causes the least damage to the biological and physical environment, but it can also be interpreted to mean the alternative which best protects, preserves, and enhances historic, cultural, and natural resources.[10] As such, NEPA does not prohibit federal agencies from selecting alternatives with adverse environmental impacts, provided that the EIS identifies potential mitigation for those impacts.

On the other hand, the Clean Water Act 404(b)(1) Guidelines require the Corps to determine practicable alternatives to a proposed action that would minimize adverse environmental effects on the aquatic ecosystem.[11] Importantly, the State could face an argument that ***only*** the Least Environmentally Damaging Practicable Alternative (LEDPA) can be permitted under the Clean Water Act, ***even if*** the NEPA alternatives analysis shows that an alternative with significant environmental impacts in comparison to the LEDPA is reasonable, feasible to implement and provides the most long-term ecosystem benefits.

CPRA is concerned that these different mandates could lead to divergent outcomes – one where the NEPA analysis might conclude that a large scale sediment diversion is the preferred alternative because of its overall environmental benefits, and another where a Corps LEDPA

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[9] *See* 40 C.F.R. § 1507.3 and 40 C.F.R. § 1506.3.
[10] 46 Fed. Reg. 18026 (1981), Memorandum to Agencies: Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, No. 6a., *available at*: https://energy.gov/sites/prod/files/G-CEQ-40Questions.pdf; *see also* 40 C.F.R. § 1505.2(b).
[11] *See* 40 C.F.R. § 230.10(a).

analysis could view dredge-only projects as preferred. That outcome would be disastrous because dredging alone does not compare with large-scale sediment diversions in providing long-term benefits to the ecosystem and Louisiana's coastal communities achieved by reconnecting the natural process between the Mississippi River and the basin.

NEPA Categorical Exclusions

NEPA's implementing regulations also provide for categories of actions "which do not individually or cumulatively have a significant effect on the human environment" and which therefore are excluded from environmental analysis, meaning no Environmental Assessment (EA) or EIS is required.[12] The purpose of categorical exclusions is to expedite the environmental review process for proposals that normally do not require additional analysis and documentation in an EA or EIS. As CEQ has explained, "categorical exclusions are not exemptions or waivers of NEPA review; they are simply one type of NEPA review" that can help reduce unnecessary paperwork and delays.[13]

Categorical exclusions provide efficiencies within the NEPA framework and a way to somewhat tailor the framework so that activities can be exempted from further environmental review. Nevertheless, while particular categorical exclusions do exist for activities that restore or enhance the natural environment, the implementation of categorical exclusions is left to each individual federal agency, or even to different bureaus within one agency,[14] and there are no categorical exclusions that specifically relate to projects that provide long-term significant beneficial impacts on an ecosystem scale such as our Priority ICP projects. These disjointed and uncoordinated efforts can lead to absurd results where, for example, an industrial development project with a high likelihood of environmental harm may ultimately be granted a categorical exclusion by one agency bureau while the ecosystem restoration project needed to restore the very environmental harm created by that industrial development project could potentially be required to undergo multiple sets of environmental analyses, including formal consultation by a different bureau within the same federal agency. This is not an abstract, hypothetical notion. Indeed, this is exactly the scenario we face in the Gulf of Mexico.

On April 6, 2009, approximately one year before the *Deepwater Horizon* oil spill disaster, the Department of Interior (DOI) Minerals Management Service (MMS)[15] reviewed BP's

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[12] *See* 40 C.F.R. § 1508.4.

[13] CEQ's Final Guidance for Federal Departments and Agencies on Establishing, Applying, and Revising Categorical Exclusions Under the National Environmental Policy Act, 75 Fed. Reg. 75628, 75631 (Dec. 6, 2010); 40 C.F.R. §§ 1500.4 & 1500.5.

[14] *See* 40 C.F.R. § 1507.3.

[15] Following the *Deepwater Horizon* oil spill disaster in 2010 DOI's MMS was reorganized and all operations except revenue collection activities were placed in the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE). In fiscal year 2012 BOEMRE was divided into two bureaus – the Bureau of Ocean Energy Management (BOEM) and the Bureau of Safety and Environment Enforcement (BSEE).

exploration plan for the Macondo Prospect, the site of the *Deepwater Horizon* oil rig, a categorical exclusion exempting BP from undertaking a more rigorous EA or EIS on its drilling operations. This particular categorical exclusion, referenced in Section 15.4(C)(10) of DOI's Departmental Manual, is specific only to the central and western Gulf of Mexico and excludes "[a]pproval of an offshore lease or unit exploration development/production plan or a Development Operation Coordination Document" from environmental analysis.[16] This example illustrates a situation in which it is easier to permit a Federal activity with a possibility of significant negative environmental impacts versus a project with long term significant beneficial environmental impacts.

Given this, why should Federal agencies not also have categorical exclusions for projects like Louisiana's Priority ICP projects that are specifically designed to provide long-term significant beneficial impacts for the environment? Indeed, this example highlights the need to modernize the current use of categorical exclusions so that they can be applied in a logical and appropriate manner to ecosystem restoration projects.[17]

Federal Coordination and Accountability

In light of the hurdles that exist within the current environmental review framework and in an effort to move project implementation forward expeditiously, CPRA has been working to identify every opportunity to ensure that our projects are prioritized at the federal level. In October 2016, the Office of Management and Budget (OMB) and CEQ issued a memorandum to federal agencies titled "Federal Coordination, Permitting and Review of Gulf Coast Ecosystem Restoration Projects"[18], which stresses prioritization of Gulf ecosystem restoration and collaboration due to significant degradation by natural factors, such as Hurricane Katrina, and human-caused factors, such as the 2010 *Deepwater Horizon* oil spill. This joint OMB-CEQ memorandum also emphasizes cooperation among federal agencies and across restoration efforts through the formalization of the Gulf Coast Interagency Environmental Restoration Working Group (GCIERWG).

As a result of both the federal commitment to prioritizing Gulf ecosystem restoration and the State's concern about the time potentially required to move priority projects through the federal regulatory process, Governor Edwards submitted a request to include the state's Priority ICP

[16] DOI Departmental Manual, Part 516: National Environmental Policy Act of 1969, Ch. 15: Managing the NEPA Process – Minerals Management Service (Effective May 27, 2004), *available at* https://elips.doi.gov/ELIPS/DocView. aspx?id=1729.

[17] This is a particularly relevant point because the EIS process for one of CPRA's largest-scale oil spill restoration projects – the Mid-Barataria Sediment Diversion – will require formal consultation to occur under Section 7 of the Endangered Species Act with a different bureau (Fish and Wildlife Service) *within the same federal agency that issued the categorical exclusion to BP for its drilling operations associated with the Deepwater Horizon oil rig*. This situation underscores the need for not only interagency coordination, but also intra-agency coordination in order to expedite environmental review, as well as a need for the Federal Government to be able to consider environmental impacts on an ecosystem basis, rather than on the basis of specific sets of natural resources.

[18] *Available at* https://obamawhitehouse.archives.gov/sites/default/files/omb/memoranda/2017/m-17-01.pdf.

projects on the Federal Infrastructure Permitting Dashboard[19] (FAST-41 Dashboard). In January, the White House Federal Permitting Improvement Steering Council approved the Mid-Barataria Sediment Diversion for inclusion on the FAST-41 Dashboard. Then, in March, in response to President Trump's January 24, 2017 Executive Order 13755, "Expediting Environmental Reviews and Approvals for High Priority Infrastructure Projects", Governor Edwards submitted all five Priority ICP projects for inclusion on the President's priority infrastructure list.

The inclusion of the Mid-Barataria Sediment Diversion on the FAST-41 Dashboard is a significant achievement that has generated a publicly available regulatory and permitting process timeline for this project to which the Federal Government can be held accountable. However, while we now have a public commitment to a Section 10-404 timeline, this timeline is significantly longer than the State believes necessary.[20] Additionally, lengthy and seemingly over-estimated review times extend the permitting schedule dramatically. For example, the FAST-41 Dashboard Coordinated Project Plan timeline shows a 50-month timeframe for completion of the Final EIS, while CPRA has estimated the timeframe to be as short as 24-36 months. Given the strategies for realizing efficiencies by being listed on the FAST-41 Dashboard, the shorter timeframe would seem more practical and realistic.

Even in cases where we have been able to secure a publicly available regulatory and permitting timeline for a large scale integrated coastal protection project, as a practical matter there may exist various ways for this timeline to slip, few binding requirements on the relevant federal agencies to meet timelines, and a lack of strong incentives within the environmental review framework to engage in comprehensive front-end coordination. This problem is not unique to the MBSD, which is currently Louisiana's only Priority ICP project listed as a FAST-41 infrastructure project. The State fully anticipates facing the same hurdles with our other large scale ecosystem restoration projects, most notably the other four Priority ICP projects. Ideally, when a major ecosystem restoration project involving multiple federal agencies is proposed, front-end coordination through centralized, executive-level leadership would guide and direct the various agencies toward a comprehensive and focused goal of efficient analysis and, ultimately, implementation.

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[19] On December 4, 2015, the Fixing America's Surface Transportation (FAST) Act was signed into law. Title 41 of the FAST Act (FAST-41) (42 U.S.C. § 4370m) was designed to improve the timeliness, predictability, and transparency of the Federal environmental review and authorization process for covered infrastructure projects.

[20] CEQ's NEPA regulations call for lead agencies to "[r]equest the participation of each cooperating agency in the NEPA process at the earliest possible time" and to "[i]ntegrate the requirements of NEPA with other planning and environmental review procedures required by law or by agency practice so that all such procedures run concurrently rather than consecutively." Despite this, the regulations do not provide any enforceable mechanism to require lead agencies to take these steps. 40 C.F.R. §§ 1501.6(a)(1) and 1500.2(c). Therefore there are often cases, such as with the Mid-Barataria Sediment Diversion, where concurrent reviews and full front-end coordination may not occur in practice.

Potential Organizational Avenues for Expediting Regulatory and Permitting Processes

There are also various organizational avenues through which the Federal Government could further streamline its regulatory and permitting processes and which would be well within the original intent of NEPA. As discussed earlier, post-2005, the State of Louisiana established CPRA as the single state entity with the authority to articulate a clear statement of priorities and to focus development and implementation efforts to achieve comprehensive coastal protection for Louisiana. This model has created efficiencies in terms of our ability to work with the Federal Government and to integrate coastal restoration and protection efforts into one agency that can address integrated coastal protection efforts at an ecosystem level. This framework has also streamlined the State's ability to implement our priority coastal projects more quickly, meaning that our coast is more resilient and our citizens are safer today than ever before.

Similarly, NEPA's Section 102 policy statement calls for an integrated and coordinated effort and provides that all agencies of the Federal Government shall "utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment".[21] Consequently, one way the Federal Government could seek to ensure that stated NEPA policy is fulfilled would be to streamline some of its own efforts and create a "one stop shop" for its regulatory and permitting efforts for large scale ecosystem restoration projects. This could be done either on a regional Gulf Coast basis, or even targeted to other coastal vulnerability hot spots such as the Outer Banks of North Carolina, Virginia Beach, the Jersey Shoreline, New York City, and Miami, that are facing some of the same issues as the Gulf Coast region.

If done on a regional scale, one option could be to use the Gulf Coast Ecosystem Restoration Council ("RESTORE Council")[22], which is an existing federal agency, as a platform for coordinating regulatory and permitting efforts relative to Gulf Coast restoration, or even more specifically for *Deepwater Horizon* oil spill restoration projects, including not only those funded with RESTORE dollars, but also Natural Resource Damage Assessment and National Fish and Wildlife Federation grant funds. Each of the relevant regulatory and permitting agencies, as well as the five Gulf Coast States are represented on the RESTORE Council, so the agency is well-positioned to serve in such a role. The RESTORE Council's 2016 Comprehensive Plan Update also contains numerous commitments to collaboration and coordination among its members, further underscoring the agency's unique position in the Federal Government to serve as a platform for meaningful regulatory and permitting reform. Additionally, the RESTORE Council

[21] *See* 42 U.S.C. § 4332(A).

[22] The RESTORE Council was created pursuant to the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies (RESTORE) of the Gulf Coast States Act of 2012 as a result of the *Deepwater Horizon* oil spill.

is working with the Gulf Coast Interagency Environmental Restoration Work Group (GCIERWG) to identify regulatory efficiencies for Gulf Coast ecosystem restoration projects; however neither entity currently has the authority to require implementation of regulatory efficiencies.

Another option could be to set up a co-located team in the Gulf to work only on regional Gulf environmental restoration projects. This co-located team could be responsible for activities such as coordinating within and among regulatory agencies, resolving regulatory issues pertaining to proposed restoration projects, developing regulatory tools to expedite coastal restoration, and drafting and/or reviewing environmental compliance documentation. Members of the team would also need to be able to effectively represent their agencies with minimal oversight, and to quickly coordinate with their agencies to identify lead contacts for specific issues and receive management feedback and direction from their respective headquarters.

This concept of a co-located team is not without precedent. In 2005, the greater New Orleans area was in a state of emergency after Hurricane Katrina caused widespread flooding. In order to respond to this emergency, the Corps' New Orleans District designed a unique alternative arrangement in cooperation with CEQ to achieve NEPA compliance using an expedited process pursuant to 40 C.F.R. § 1506.11, so that the repair and rebuilding of levees could be completed as quickly as possible given the emergency conditions in New Orleans.[23] This included a co-located team hosted by the New Orleans District including staff from multiple relevant federal agencies to help advance coastal restoration and assist with other activities. This co-located team helped develop the Louisiana Coastal Area Ecosystem Restoration Plan and helped expedite the regulatory review of the post-Katrina upgrades of the Greater New Orleans Hurricane Storm Damage Risk Reduction System (HSDRRS).

In either case, the designation of a "parent organization" or a single federal entity/team to be ultimately responsible for streamlining the regulatory process for Gulf Coast ecosystem restoration projects would represent significant progress in terms of reducing federal bureaucracy while also emphasizing Gulf Coast ecosystem restoration as a national priority. This designation would also be entirely consistent with NEPA's original intent. Of course, regardless of whether this effort is undertaken on a regional or more national scale, in order to have the authority to implement meaningful federal change with respect to how environmental review and permitting processes are carried out, this entity or agency would need to be empowered to conduct certain

[23] Public Notice of Adoption of Alternative Arrangements under the National Environmental Policy Act for New Orleans Hurricane and Storm Damage Reduction System. 72 Fed. Reg. 11337 (March 13, 2007). *See also* U.S. Army Corps of Engineers New Orleans District "NEPA Compliance and Hurricane Rebuilding", available at http://www.mvn.usace.army.mil/Missions/Environmental/NEPA-Compliance-Rebuilding/; CEQ's Guidance on Emergencies and the National Environmental Policy Act (2016); and Memorandum from Nancy H. Sutley, Chair CEQ to Heads of Federal Departments and Agencies Regarding Emergencies and the National Environmental Policy Act (May 12, 2010) (discussing NEPA environmental review of actions proposed in response to an emergency situation, such as the ongoing Federal response to the oil spill in the Gulf of Mexico).

activities. For example, the entity should be empowered to: direct agencies facing multiple federal decisions on a particular project to use/adopt a single NEPA document as appropriate, require and incentivize agencies to complete as much permitting and consultation analyses as possible on the front-end, and work with CEQ to adapt the regulatory and permitting process to provide uniform NEPA guidance to federal agencies to ensure that ecosystem restoration projects with long-term beneficial environmental impacts are evaluated on the basis of their overall long-term impacts in a coordinated manner so that these projects can be implemented as quickly or more efficiently than industrial development projects with negative environmental impacts.

Louisiana's Efforts to Expedite Large Scale Integrated Coastal Protection Projects

The State of Louisiana has also been working diligently to identify ways it can act to expedite the implementation of its Priority ICP projects at the state level. In 2015 and 2016, CPRA spent some $30 million on engineering and design and $373 million on construction. Between 2017 and 2020, CPRA plans to spend an estimated $350 million on engineering and design and $2.8 billion on construction. While the vast majority of the *Deepwater Horizon* settlement funds will be paid out in installments over a 15 year period, the State of Louisiana is making every effort to cash flow the large scale projects so that they will be built sooner rather than later. Nonetheless, the regulatory challenges have the potential to eliminate the benefits of such efforts in expediting large scale restoration.

For example, CPRA is currently pursuing multiple ways to cash flow projects in advance of settlement payments. As one example, the Louisiana Legislature passed legislation on June 7, 2017 to authorize the use of outcome-based performance-based contracting. This is an alternative, full delivery model, under which the State would issue a single contract to deliver an ecosystem restoration or marsh creation project. Under this project delivery model, the State's contractor would be responsible for delivering all aspects of the project, including financing, acquisition of land rights and permits, engineering and design, construction, and monitoring and maintenance of the project. Unlike other more traditional project delivery models, including design build, payment for these contracts is based on successful performance of the completed project, through a series of performance objectives and criteria that must be successfully met in order for payments to be released to the contractor. Outcome-based performance contracting provides several benefits to the State, including opportunities for creative and innovative financing, better shared risks with the contractor since all parties are invested in a project's success, and better value in being able to deliver more projects faster, which has ecological as well as financial benefits for Louisiana's coast. Additionally, CPRA has been working to identify ways to leverage oil spill funding streams with other funding streams, such as GOMESA, to advance construction of our Priority ICP projects.

The State has also taken unprecedented steps to elevate our coastal crisis and the associated federal environmental review and permitting to the national stage. On April 18, 2017, Governor

Edwards issued Emergency Proclamation No. 43 JBE 2017, declaring a state of crisis and emergency in coastal Louisiana as defined by La. R.S. 49:214.2(4). This Emergency Declaration not only empowers Louisiana state agencies to expedite implementation of integrated coastal protection, but also requests the President and Congress to recognize the national significance of Louisiana's coast and to use all available means to expedite all federal permitting and environmental review, including creation of waivers, categorical exemptions, alternative measures or expedited processes, and assure cooperation and collaboration between federal, state, and local agencies and entities to clear regulatory hurdles. Governor Edwards' Emergency Declaration, in combination with a similar declaration by the President, would position the State well for the possibility of setting up an alternative arrangement for NEPA review, similar to what was done post-Katrina for the HSDRRS, to achieve NEPA compliance in an expedited process for Gulf Coast ecosystem restoration projects. Therefore, consideration of a Presidential declaration of an emergency for the Louisiana coast would be beneficial.

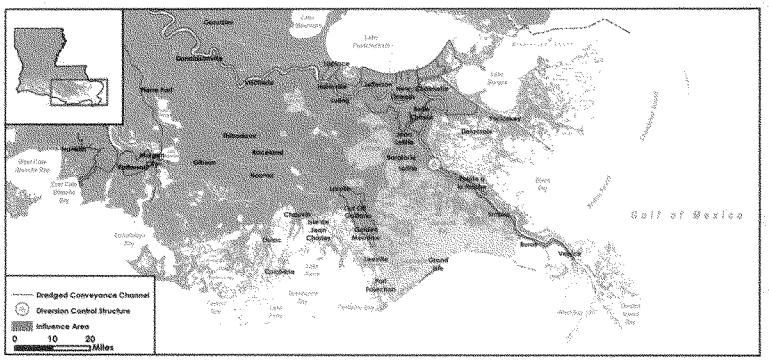
As discussed earlier, having the money and the projects today would mean key project savings over time and enhanced protection for our citizens sooner rather than later. This is an opportunity we cannot afford to miss.

Conclusion

Current environmental review and regulatory processes meant to protect the environment are delaying the State of Louisiana from implementing large-scale integrated coastal protection projects. Coastal Louisiana is in an existential crisis and needless delay is not an option. We must work to identify all available efficiencies so that project implementation can move forward expeditiously. If the laws and processes that are intended to protect the environment ultimately operate as tools to delay or prevent implementation of the State's coastal restoration and protection projects, the resources we are trying to protect and restore will soon disappear.

The State of Louisiana is committed to using every tool in its toolbox to ensure that its Priority ICP projects are implemented quickly and efficiently. The State anticipates that it will seek implementation of up to five complex coastal restoration projects over the next few years. If efficiencies are not identified and implemented immediately, the simultaneous submission of these projects on top of the Federal agencies' existing workloads will exceed existing federal resources. We believe there are a range of measures that could be taken at the Federal level, from process streamlining to Federal reorganization, that could simplify the environmental review and regulatory process and generate a more rational way to proceed with project implementation that would more fully accomplish the goals and objectives of this country's national environmental policy.

Appendix A: Priority ICP Project Fact Sheets



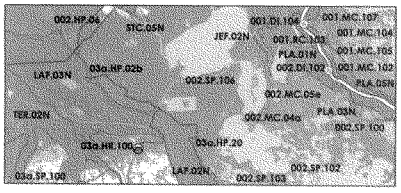
Description

Sediment diversion into Mid-Barataria near Myrtle Grove to build and maintain land, 75,000 cfs capacity (modeled at 5,000 cfs for Mississippi River flows below 200,000 cfs; variable flows to capacity between 200,000 and 1,250,000 cfs calculated using a linear function; diverts exactly 75,000 cfs when flows are at 1,250,000 cfs).

Project Cost Estimate

	Estimated Cost
Planning/Engineering & Design	$39,400,000
Construction	$821,400,000
Operations & Maintenance	$138,000,000
Total	**$998,800,000**

Other Nearby Projects in the Master Plan



Scale of Influence

Local | Sub-basin | Basin | **Regional**

Project Location

Plaquemines Parish

Project Duration

Planning, Engineering, and Design is estimated to take 5 years.
Construction is estimated to take 3 years.

Land Area Built or Maintained*

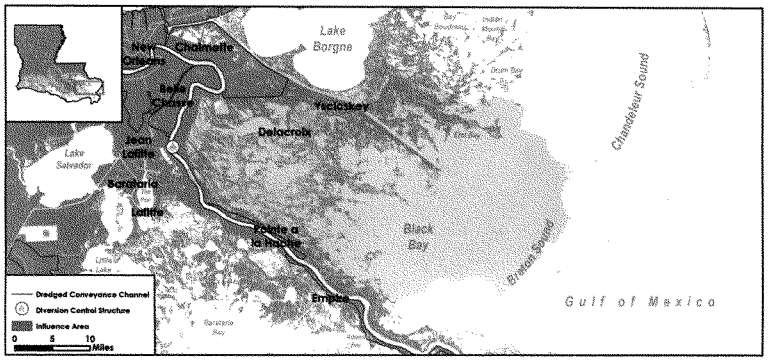
Near Term (Year 20)	8,041 acres
Long Term (Year 50)	29,686 acres

**Based on the most recent project-specific Delft-3D modeling analysis.*

Mid Breton Sound Diversion

Sediment Diversion

Project ID: 001.DI.106



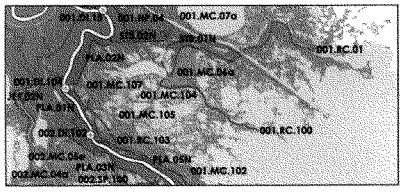
Description

Sediment diversion into Mid-Breton Sound in the vicinity of White's Ditch to build and maintain land. 35,000 cfs capacity (modeled at 35,000 cfs when the Mississippi River flow equals 1,000,000 cfs; flow rate calculated using a linear function for river flow from 200,000 cfs to 1,000,000 cfs; flows variable above 1,000,000 cfs; 5,000 cfs minimum flow maintained when Mississippi River flow is below 200,000 cfs).

Project Cost Estimate

	Estimated Cost
Planning/Engineering & Design	$30,500,000
Construction	$381,400,000
Operations & Maintenance	$67,100,000
Total	**$479,000,000**

Other Nearby Projects in the Master Plan



Scale of Influence

Local | Sub-basin | **Basin** | Regional

Project Location

Plaquemines Parish

Project Duration

Planning, Engineering, and Design is estimated to take 4 years.
Construction is estimated to take 2 years.

Land Area Built or Maintained*

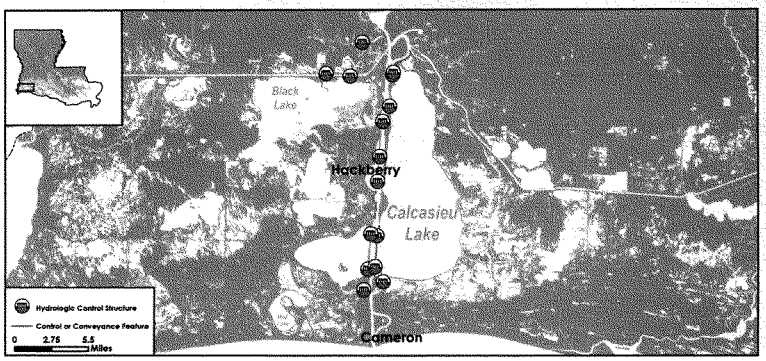
Near Term (Year 20)	5,066 acres
Long Term (Year 50)	15,831 acres

**Based on the most recent project-specific Delft-3D modeling analysis.*

Calcasieu Ship Channel Salinity Control Measures

Hydrologic Restoration

Project ID: 004.HR.06



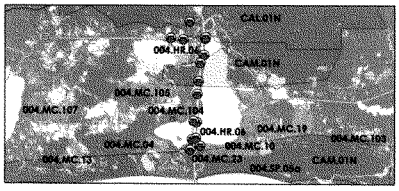
Description

Construction of sill and wall structures in West Pass, East Pass, Lake Wall, Long Point Lake, Nine Mile Cut, Dugas Cut 1, Dugas Cut 2, Texaco Cut, Turner's Bay, Salt Ditch, Drainage Canal, and Choupique Bayou to prevent saltwater intrusion into the Calcasieu Ship Channel.

Project Cost Estimate

	Estimated Cost
Planning/Engineering & Design	$18,800,000
Construction	$234,700,000
Operations & Maintenance	$8,800,000
Total	**$262,300,000**

Other Nearby Projects in the Master Plan



Scale of Influence

Local | Sub-basin | Basin | **Regional**

Project Location

Calcasieu Parish; Cameron Parish

Project Duration

Planning, Engineering, and Design is estimated to take 2 years.
Construction is estimated to take 1 year.

Land Area Built or Maintained*

Near Term (Year 20)	-1,458 acres
Long Term (Year 50)	12,685 acres

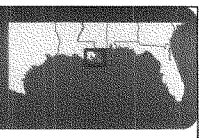
**Based on the most recent project-specific modeling analysis.*

2017 Coastal Master Plan
Implementation Period 1

Gulf Coast Ecosystem Restoration Council

Mississippi River Delta Watershed

Mississippi River Reintroduction into the Maurepas Swamp
(LA_RESTORE_005_000_Cat1)



Project Name: Mississippi River Reintroduction into Maurepas Swamp - Planning
Cost: Category 1: $14,190,000
Responsible Council Member: State of Louisiana

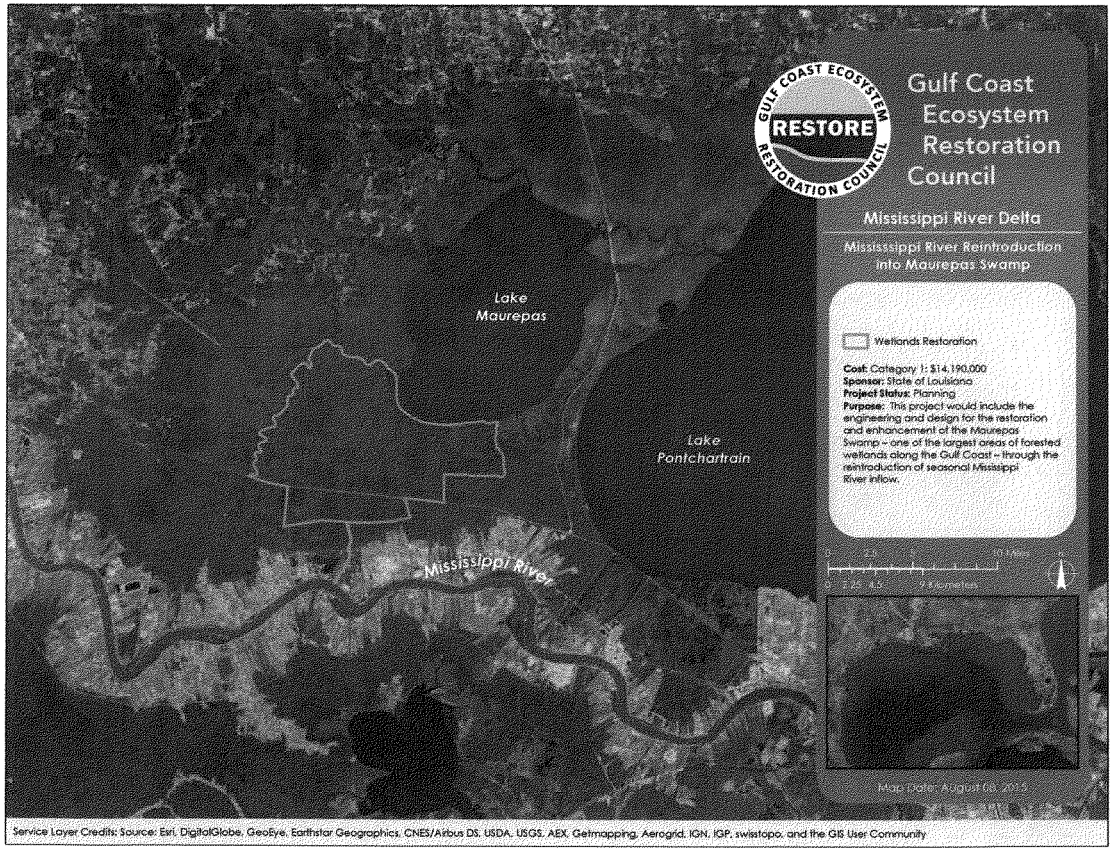
Project Details: The Maurepas Swamp is one of the largest areas of forested wetlands along the Gulf Coast, encompassing approximately 57,000 hectares (approximately 140,850 acres) of bald cypress-tupelo swamp west of Lake Pontchartrain. Historically, the swamp received sediment and nutrient inputs from the Mississippi River during seasonal overbank flooding; however, reduced freshwater inflow and sediment input has caused land loss within the sub-basin and resulted in the periodic introduction of brackish water from Lake Pontchartrain into Lake Maurepas and the swamp.

Activities: The project would include engineering and design of the Mississippi River Reintroduction into Maurepas Swamp project, leading to construction-ready plans and specifications and the development of an adaptive management plan to guide decision-making for future project maintenance activities. If implemented in the future, the project would consist of the following major components designed to divert fresh water from the river into the Maurepas Swamp: a gated river intake structure; a box culvert through the levee; a sedimentation basin; a conveyance channel; and a drainage pump station. The maximum design flow is 2,000 cubic feet per second.

Environmental Benefits: If implemented in the future, in addition to restoring and enhancing a total of 18,300 hectares (approximately 45,220 acres) of forested wetland, the project would provide a host of other benefits to wildlife that are dependent on cypress-tupelo swamps. Increased primary productivity and water quality would increase food resources and subsequently increase secondary productivity of freshwater fish. Wading birds, migratory birds, bald eagles, alligators and other wildlife species would also benefit. The project could maintain stands of mature bald cypress and other woody vegetation, which would ensure that suitable nesting areas are available for numerous bird species. Bald eagles, for example, predominantly use bald cypress when nesting in Louisiana, and the Maurepas Swamp supports a large number of nests.

Duration: The timeline for this planning project is estimated to be three years for permitting and land rights. If implemented in the future, project construction would take four years.

More information on this activity can be found in Appendix D. Mississippi River Delta; Unique Identifier: LA_RESTORE_005_000_Cat1.


Gulf Coast Ecosystem Restoration Council
Mississippi River Delta
Mississippi River Reintroduction into Maurepas Swamp
Wetlands Restoration
Cost: Category 1: $14,190,000
Sponsor: State of Louisiana
Project Status: Planning
Purpose: This project would include the engineering and design for the restoration and enhancement of the Maurepas Swamp – one of the largest areas of forested wetlands along the Gulf Coast – through the reintroduction of seasonal Mississippi River inflow.
Lake Maurepas
Lake Pontchartrain
Mississippi River
Map Date: August 06, 2015
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

HOUMA NAVIGATION CANAL LOCK COMPLEX

Purpose

The Houma Navigation Canal Lock Complex is a hydrologic project that will provide several critical purposes in the Terrebonne Basin:

- One purpose of the project is to reduce salt water intrusion and distribute freshwater within the Terrebonne Basin.
- The project will also provide storm surge protection as a part of the Morganza to Gulf system.
- The structure will consist of a lock for everyday traffic and a wider flood gate for larger vessels as needed. The flood gate will have the ability to be opened or closed as needed to maximize freshwater distribution within the basin.

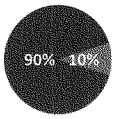
Ecosystem Outcomes and Economic Impacts

- The Terrebonne Basin is experiencing one of the highest rates of land loss in coastal Louisiana. By working synergistically with the TE-110 project this project will help to restore and protect this fragile ecosystem.
- This project will help to restore historic salinity regimes in the mid-Terrebonne basin.
- Operations to control freshwater distribution will be a key part of the project for the Increase Atchafalaya Flow to Terrebonne (TE-110) project.
- The structure is a part of the Morganza to the Gulf of Mexico (TE-64) hurricane protection system.
- Construction and Operation of the structure will be key to the success of the project purposes.

Costs[1]

- Estimated Engineering and Design: $34 million
- Estimated Construction[2]: $350 million

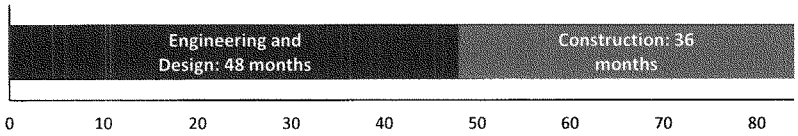
1. estimate based off of alternative 3 from URS Optimization Study
2. construction costs do not include construction admin and inspection



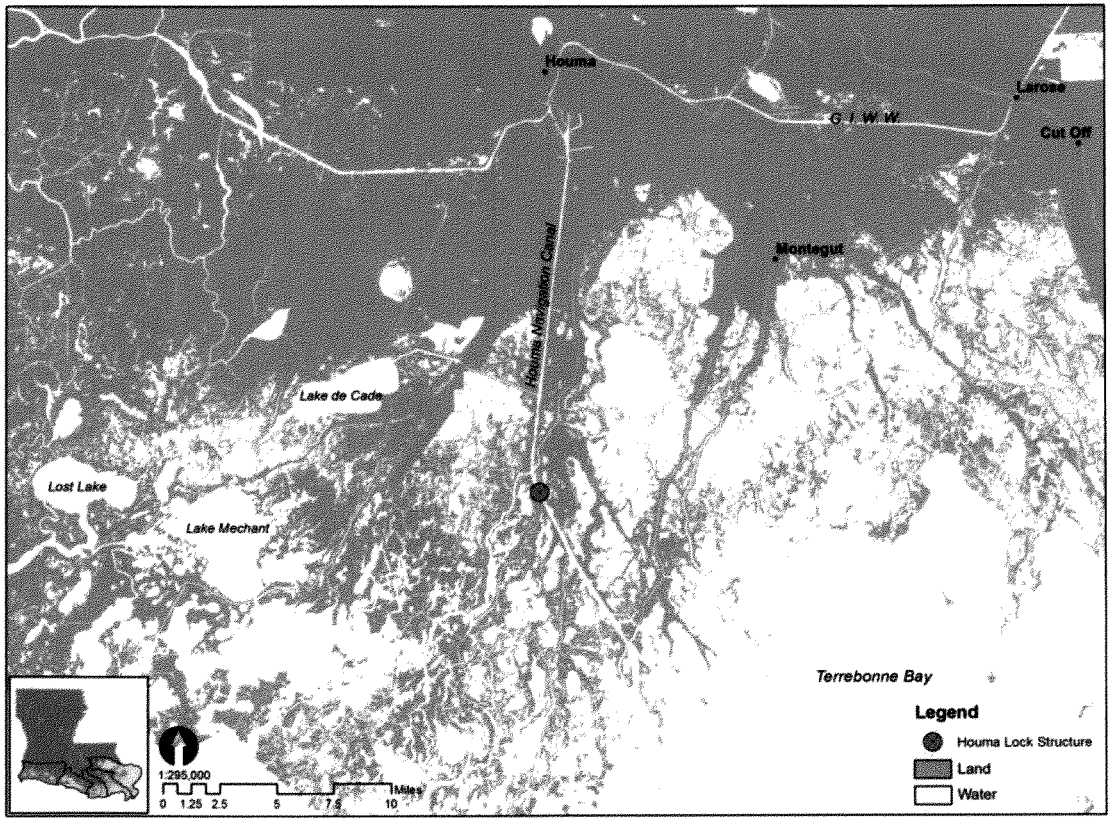
Estimated Engineering and Design
Estimated Construction

Implementation Timeline

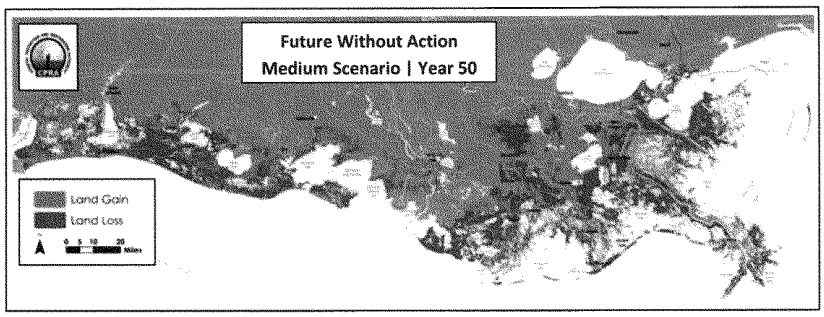
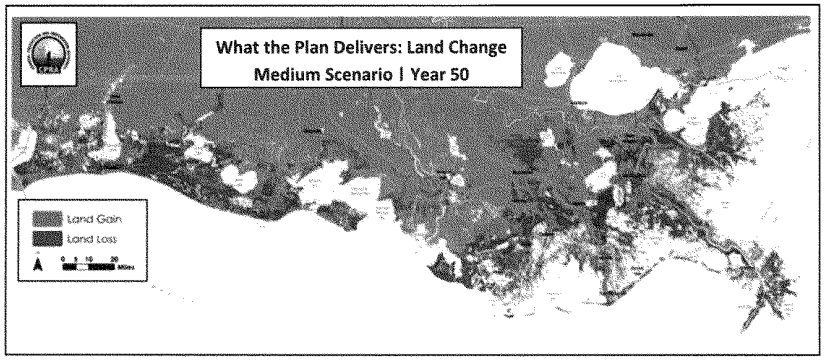
Engineering and Design: Spring 2016 through spring 2019
Construction: Winter 2019 through winter 2022



Houma Navigation Canal Lock Complex



Appendix B: 2017 Coastal Master Plan

Appendix C: Coastal Master Plan Results Maps

Below is a map of what Louisiana's Coastal Master Plan delivers: