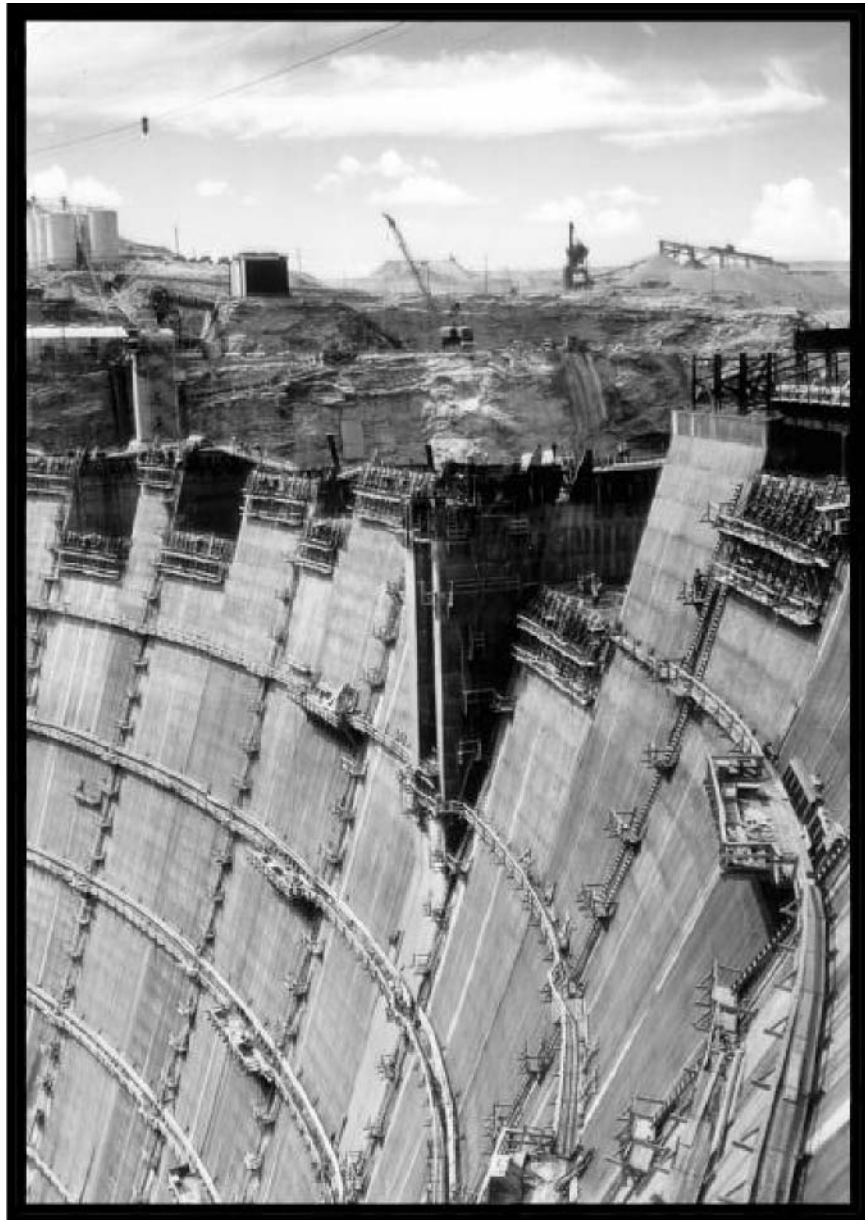


# Brief History Bureau of Reclamation



**Glen Canyon Dam During Construction  
Colorado River Storage Project, April 9, 1963**

## THE MOVEMENT FOR RECLAMATION

Less than 1 percent of water on Planet Earth is suitable for people to use, and that small percentage must be shared with nature. The other 99+ percent is either too salty or brackish, or it is unavailable in icecaps, glaciers, the atmosphere, and groundwater. Since the American West is generally arid, water has always been a major concern of Native Americans and settlers who relied upon the relatively meager supply for agriculture, settlement, and industry.

As settlers moved into the West, they had to watch the gush of spring and early summer runoff flow away from their towns and crops. They knew they had lost water that would not be available in the dry days of late summer when water shortages are common in the West. Settlers responded by developing relatively simple and inexpensive water projects and creating complicated water law systems in the West. Varied in details, western water law systems generally permanently allocated the right to use water based on the concept of prior appropriation (Appropriation Doctrine) (first in time, first in right) for beneficial use.

At first, water development projects were simple. Settlers diverted water from a stream or river and used it nearby; but, in many areas, the demand for water outstripped the supply. As demands for water increased, settlers wanted to store runoff, which they considered "wasted," for later use. Storage projects would help maximize water use and make more water available for use when needed. Unfortunately, private and state-sponsored irrigation ventures often failed because of lack of money and/or lack of engineering skill. This resulted in mounting pressure for the Federal Government to develop water resources.

In the jargon of the day, advocates called irrigation projects "**reclamation** projects." The concept was that irrigation would "reclaim" or "subjugate" western arid lands for human use. Many pressures contributed to the discussions that influenced American public opinion, Congress, and the executive branch to support of "reclamation." Among them were:

- John Wesley Powell's explorations in the West and his published articles and reports;
- Private pressures through publications, irrigation organizations, and irrigation "congresses;"
- Nonpartisan political pressures in the West; and,
- Federal Government studies conducted by the U.S. Army Corps of Engineers and U.S. Geological Survey (USGS).

Before 1900, the United States Congress had already invested heavily in America's infrastructure. Roads, river navigation, harbors, canals, and railroads had all received major subsidies. A tradition of government subsidization of settlement of the "West" was long-standing when the Congress in 1866 passed "An Act Granting the Right-of-Way to Ditch and Canal Owners over the Public Lands, and for other Purposes." A sampling of subsequent congressional actions promoting irrigation includes passage of the Desert Land Act in 1877 and the Carey Act in 1894—both intended to encourage irrigation projects in the West. In addition, beginning in 1888, Congress appropriated money to the USGS to study irrigation potential in the West. Then, in 1890 and 1891, while that irrigation study continued, the Congress passed legislation reserving rights-of-way for reservoirs, canals, and ditches on lands then in the public domain. However, westerners

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wanted more; they wanted the Federal Government to invest directly in irrigation projects. The "reclamation" movement demonstrated its strength when pro-irrigation planks found their way into both Democratic and Republican platforms in 1900. In 1901, "reclamation" gained a powerful and aggressive supporter in Theodore Roosevelt when he became President after the assassination of William McKinley.

## RECLAMATION BECOMES A FEDERAL PROGRAM

President Roosevelt supported the "reclamation" movement because of his personal experience in the West, and because of his "conservation" ethic. At that time, "conservation" meant a movement for sustained exploitation of natural resources through careful management for the good of the many. Roosevelt also believed "reclamation" would permit "**homemaking**" and support the agrarian Jeffersonian Ideal. Reclamation supporters believed the program would make homes for Americans on family farms. Passed in both Houses of the Congress by wide margins, President Roosevelt signed the Reclamation Act on June 17, 1902.

In July of 1902, Secretary of the Interior Ethan Allen Hitchcock established the United States Reclamation Service (USRS) within the USGS. There Charles D. Walcott, director of the USGS and the first "director" of the USRS, placed the new activity in the USRS's Division of Hydrography. Frederick Newell became the first "Chief Engineer" while continuing his responsibilities as chief of the Division of Hydrography.

The Reclamation Act required that:

Nothing in this act shall be construed as affecting or intended to affect or in any way interfere with the laws of any State or Territory relating to the control, appropriation, use, or distribution of water . . . or any vested right acquired thereunder, and the Secretary of the Interior . . . shall proceed in conformity with such laws . . .

That meant implementation of the act required that Reclamation comply with numerous and often widely varying state and territorial legal codes. Development and ratification over the years of numerous interstate compacts governing the sharing of stream flows between states, as well as several international treaties governing the sharing of streams by the United States with Mexico or Canada, made Reclamation's efforts to comply with U.S., state, and territorial water law even more complex.

In its early years, the Reclamation Service relied heavily on the USGS Division of Hydrography's previous studies of potential projects in each western state or territory. As a result, between 1903 and 1906, about 25 projects were authorized throughout the West. These projects were funded by the "Reclamation Fund" into which Congress ordered the deposit of revenues from public land sales in the West. Later, other revenue sources were also directed into the "Reclamation Fund." Because Texas had no Federal lands, it was not one of the original "reclamation" states. It became a reclamation state only in 1906.

## PRINCIPLES OF THE RECLAMATION PROGRAM

During its early years Reclamation, at the direction of the various administrations and the

Congress, developed several basic principles for the reclamation program. The details have changed over the years, but the general principles remain:

- Federal monies on reclamation water development projects would be repaid by the water users who benefitted;
- Projects remain Federal property even when the water users repay their share of Federal construction costs;
- Reclamation generally contracts with the private sector for construction work;
- Reclamation employees administer contracts and inspect construction to assure that contractors' work meets Government specifications;
- In the absence of acceptable bids on a contract, Reclamation, especially in its early years, would complete a project by “force account”(that is, would use Reclamation employees to do the construction work); and,
- Hydroelectric power revenues could be used to repay project construction charges.

### **EARLY HISTORY OF RECLAMATION**

In 1907, the USRS separated from the USGS to become an independent bureau within the Department of the Interior. The Congress and the Executive Branch, including USRS, were then just beginning a learning period during which the economic and technical needs of Reclamation projects became clearer. Initially, overly optimistic about the ability of water users to repay construction costs, Congress established a 10-year repayment period. Subsequently, Congress increased the repayment period to 20 years, then to 40 years, and ultimately to an indefinite period based on “ability to pay.” Other issues that arose included: soil science problems related both to construction and to the ability of soils to grow crops; economic viability of projects (repayment potential) including climatic limitations on the value of crops; waterlogging of irrigated lands on projects, resulting in the need for expensive drainage projects; and the need for practical farming experience for people successfully to take up project farms. Many projects were far behind their repayment schedules, and settlers were vocally discontented.

The learning period for Reclamation and the Congress resulted in substantial changes when the USRS was renamed the Bureau of Reclamation in 1923. Then, in 1924, the Fact Finder’s Act began major adjustments to the basic Reclamation program. Those adjustments were suggested by the Fact Finder’s Report which resulted from an in-depth study of the economic problems and settler unrest on Reclamation’s 20-plus projects. Elwood Mead, one of the members of the Fact Finder’s Commission, was appointed Commissioner of Reclamation in 1924 as the reshaping of Reclamation continued. A signal of the changes came in 1928, for instance, when the Congress authorized the Boulder Canyon Project (Hoover Dam), and, for the first time, large appropriations began to flow to Reclamation from the general funds of the United States instead of from the Reclamation Fund or loans to the Fund.

In 1928, the Boulder Canyon Act ratified the Colorado River Compact and authorized construction of Hoover Dam and the All-American Canal—key elements in implementation of the Compact. Subsequently, during the Great Depression, Congress authorized almost 40 projects for the dual purposes of promoting infrastructure development and providing public works jobs. Among these projects were the beginnings of the Central Valley Project in California, the Colorado-Big

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Thompson Project in Colorado, and the Columbia Basin Project in Washington.

Ultimately, of Reclamation's more than 180 projects, about 70 were authorized before World War II. The remainder were authorized during and after World War II in small and major authorizations, such as the Pick-Sloan Missouri Basin Program (1944), the Colorado River Storage Project (1956), and the Third Powerplant at Grand Coulee Dam (1966). Reclamation's last really big project construction authorization occurred in 1968 when Congress approved the Colorado River Basin Project Act which included, among others, the Central Arizona Project, the Dolores Project, the Animas-La Plata Project, and parts of the Central Utah Project.

## **LABORATORIES**

During construction, one problem confronted by Reclamation was laboratory testing of special problems. Reclamation conducted model testing at various locations such as Montrose and Estes Park, Colorado, Colorado State University, and various locations in downtown Denver. In 1946 Reclamation located its primary laboratory at the Denver Federal Center. A sampling of the work of these research laboratories included model and design studies for hydraulic structures, concrete technology, electrical problems, construction design innovations, groundwater, weed control in canals and reservoirs, various environmental issues, water quality, ecology, drainage, control of evaporation and other water losses, and other technical subjects.

## **WATER**

Reclamation's mission statement reads: "The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public." Under this mission statement, Reclamation's number one priority is always to deliver water, but that priority is often affected by the available water supply and the constraints imposed by various laws, regulations, and court rulings. During an average water year, more than 180 Reclamation projects deliver agricultural water that irrigates about 10,000,000 acres of land in the arid West—about one-third of the irrigated acreage in the West. Reclamation also delivers water used by about one third of the people in the West.

## **HYDROELECTRIC GENERATION**

The second major product delivered to the American public by Reclamation is hydroelectricity. Although the earliest hydroelectric plants on Reclamation projects went into operation in 1908 and 1909, it was only during the 1930s that generation of hydroelectric power became a principal benefit of Reclamation projects. Reclamation built the large hydroelectric powerplants at Hoover, Grand Coulee, and Shasta dams only after a hard public debate about whether the Federal Government should become involved in public power production or whether private power production should be the rule. It was the Hoover Dam precedent which ultimately allowed Reclamation to become a major hydroelectric producer. Once the issues received public airing during discussions on approval of Hoover Dam, hydroelectric projects became a feature of many additional Reclamation dams. Hydroelectric revenues have subsequently proven an important source for funding repayment of Reclamation project costs. While the water available in a system

determines how much power it is possible to generate, in 1993, for example, Reclamation had 56 powerplants online and generated 34.7 billion kilowatt hours of electricity. In 1999, revenues from Grand Coulee hydroelectric generation equaled about two-thirds of Reclamation's entire appropriated budget.

## **RECLAMATION AND INTERSTATE WATERS**

Commissioners representing Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming met in Santa Fe in 1922, with Secretary of Commerce Herbert Hoover moderating, to address allocation of the water of the Colorado River. The commissioners developed and signed the Colorado River Compact (Compact) to divide and allocate the waters of the Colorado River. The Compact then had to be ratified by each state legislature before going to the Congress for ratification by the United States. For Reclamation, this is the most complex and difficult of the interstate compacts, and it was ratified by the Congress in 1928 without the concurrence of Arizona. California and Arizona argued for years over how to calculate Arizona's share of the waters of the lower Colorado River. The Arizona legislature ratified the Compact only in 1944 and then later sued California over how to interpret the Compact. The lawsuit lasted until 1964. Concern over the Compact has only heightened over the years as it became increasingly apparent that there isn't consistently as much water in the Colorado River system as was presumed by the signers and ratifiers. In addition, the Compact required the Upper and Lower basins to share the burden of delivering 1.5 million acre-feet of water promised to Mexico in a later 1944 treaty. Reclamation is deeply involved in these complicated Colorado River issues because Reclamation reservoirs largely store and regulate the flow of the Colorado River. Reclamation dams in the Upper Colorado River Basin deliver water to Glen Canyon Dam, which then stores the water in Lake Powell. From Lake Powell, the water is delivered in accordance with the terms of the Colorado River Compact and operating agreements among the Colorado River Basin states, to the Lower Colorado River Basin states. Once delivered to the Lower Colorado River Basin the water is held until needed in Lake Mead behind Hoover Dam.

All over the West, Reclamation is affected and guided by other compacts under the terms of which states share the waters of interstate streams.

## **SPECIAL PROJECTS**

Reclamation's traditional area of operation is the seventeen, arid, states of the American West. Reclamation has, however, at times been assigned work outside that traditional operational area. For instance, during the late 1920s, Reclamation studied "planned group settlement" in the South in cut over areas and swamps. This project was supposed to create new farms, but it ultimately died as impacts of the Depression on the farm economy were recognized. Other projects in the eastern United States were also undertaken, and Reclamation's photograph collection includes hundreds of photographs from areas outside the arid West. Reclamation was also involved in the technical issues and design of many of the Tennessee Valley Authority's dams.

Beginning in the 1930s Reclamation studied possible projects in Hawaii, and in 1954 the Congress authorized investigations on Oahu, Hawaii, and Molokai among the Hawaiian Islands. In

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the 1940s and 1950s Reclamation studied water development projects in Alaska and ultimately built the Eklutna Project outside Anchorage. The Department of the Interior transferred the Eklutna Project out of Reclamation in 1967.

Since 2000, Reclamation has supervised additional studies in Hawaii, and Commissioner Bob Johnson was tasked to work with the states of Georgia, Alabama, and Florida over Atlanta's water supply, the flows of the Chattahoochee River, and affected endangered species.

## **NATIVE AMERICANS AND RECLAMATION**

In the early years of its history, Reclamation was actively involved with the Indian Service, in irrigation projects for Indian tribes including the San Carlos, Blackfeet, and Yuma. However, the majority of Reclamation project water went to non-Indians. In the early years, Reclamation's mission to develop water supplies appeared to carry the potential for injuring the rights of tribes. If non-Indians began using Reclamation-provided water, it was feared they would establish a senior right under the Appropriation Doctrine, leaving little or no water for the tribes when they were ready to develop their reservation lands. In the landmark 1908 decision, *Winters v. United States*, the Supreme Court attempted to reconcile this potential conflict and laid out the principles that came to be known as the "Winters Doctrine." This case concerned the Milk River in Montana and delayed development of Reclamation's Milk River Project for several years. The Winters Doctrine established the principle of reserved rights. Indian tribes with reservations have reserved water rights in sufficient quantities to fulfill the purposes for which the reservation was established, *and* the date of the reserved right is the date of the treaty or Executive Order setting aside the reservation. The dates of reserved rights generally are very early in relation to non-Indian settlement and, thus, establish very high priority for Indian water rights. Further, unlike appropriated water rights, a reserved water right does not have to have been used to remain in effect—regardless of how many years have passed. A congressionally authorized and funded Reclamation project could not take precedence over senior or reserved water rights. However, for various reasons, some tribes have encountered difficulties in attempting to develop their senior reserved water rights.

In recent years Reclamation has designed projects that include provisions for delivering water to tribes. Among notable examples are the Central Arizona Project, the Dolores Project, and the Animas-La Plata Project, as well as rural water distribution systems such as the Mni Wiconi and Mid-Dakota in the Dakotas which provide rural culinary water supply in a large area that includes several reservations. Reclamation staff members also often serve on negotiating teams or provide technical expertise to negotiating teams working for the Secretary of the Interior to develop water solutions for Native Americans.

## **RECLAMATION PROJECTS AND THE ENVIRONMENT**

Conservation and environmental issues are not as new to Reclamation as many think. However, the nature of conservation and environmental issues and how they have affected Reclamation has changed considerably. For instance, very early in Reclamation's history between 1908 and 1912, for instance, there was a public outcry about conservation of Lake Tahoe's natural lake level and scenic beauty. Reclamation had proposed to build a dam both to increase storage

capacity and to occasionally lower the existing lake level to benefit the Newlands Project. Due to public opposition that project was not built. In a distinctly different direction, Reclamation's Belle Fourche Project in South Dakota was specifically designed to avoid mixing hazardous industrial mining wastes in Whitewood Creek with canal irrigation water.

Subsequently, proposals for Reclamation projects raised public consciousness about major dams and their impacts on various resources. By the mid-1930s, Reclamation was looking at fishery issues as it addressed construction of Grand Coulee and other dams. On another front, in the mid- to late-1930s, Coloradoans and their congressional representatives pushed Reclamation to build the Colorado-Big Thompson Project which would require construction on the fringe of and under Rocky Mountain National Park. The project was ultimately built because Rocky Mountain National Park was created with a provision in the enabling law specifically authorizing a water development project infringing on the national park. In the 1950s, the controversy over construction of Echo Park Dam in Dinosaur National Monument heightened public awareness of issues surrounding construction of a dam in a National Park Service-managed area. Ultimately, public opinion forced cancellation of plans for Echo Park Dam and resulted in construction of an alternative, Glen Canyon Dam. By the 1960s, Marble Canyon and Bridge Canyon dams were proposed, but Secretary of the Interior Stewart Udall canceled those dams because of public pressure to preserve parts of the Grand Canyon. Ironically, opposition was based at least partly on the public and environmentalists' belief that nuclear power generation was a viable alternative to meet growing electric power needs in the West.

During the 1960s, Reclamation's work began to change substantially as public awareness changed. Americans became increasingly concerned and proprietary about the use and protection of natural resources. This change resulted, in part, from improved communication and, in part, from improved science resulting in clearer understanding of the complex interactions of the communities of nature with western water issues. Americans were beginning to better understand issues about the West and to consider the West "mine" or "ours"—even though they lived elsewhere.

Rachel Carson's *Silent Spring*, published in 1962, helped build public support for more environmentally sensitive project development. While even popular music expressed growing environmental concerns, increased public consciousness and support manifested itself in political action when the Congress passed the Wilderness Act in 1964, amendments to the Fish and Wildlife Coordination Act in 1965, the National Historic Preservation Act in 1966, the Wild and Scenic Rivers Act of 1968, the National Environmental Policy Act (NEPA) of 1969, the Endangered Species Act in 1973, and many other laws. Accompanying and buttressing these Federal laws were presidential executive orders; Federal regulations; and state and local laws, orders, and regulations.

The specific effects of Reclamation projects were also better understood in this period. Dam construction affected fish populations and often altered the flow characteristics and ecology of rivers and streams. Land "reclamation" and construction projects affected plant, animal, fish, and bird populations through displacement or destruction of habitat. In addition, land development for agriculture or subdivisions often destroyed historic or archeological resources. Destruction of non-arable wetlands was a special environmental problem. Hydroelectric production, often considered "pollution-free," was recognized as causing environmental effects by altering water temperatures, flow regimes, and natural fluctuation patterns thus affecting native fish populations' environment,



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migration, and spawning. Environmental issues that conflicted with traditional bureau missions were not unique to Reclamation. Americans identified and looked toward resolution of many environmental effects caused by construction and natural resources exploitation programs in both the government and private sectors.

Because of the new laws and regulations and increasing public/political pressure, Reclamation hired new staff to deal with environmental and historic preservation issues. Reclamation now invests a great deal of time and money in issues such as: endangered species; in-stream flows; preservation and enhancement of quality freshwater fisheries below dams; preservation of wetlands; conservation and enhancement of fish and wildlife habitat; dealing with Endangered Species Act issues; controlling water salinity and sources of pollution; ground water contamination; and the recovery of salmon populations particularly on the Trinity/Klamath, Columbia/Snake, and San Joaquin/Sacramento River systems. Reclamation implemented “reoperation” (revision of the way hydroelectric power generation is scheduled and carried out) of hydroelectric facilities at Glen Canyon Dam on the Colorado River to better achieve environmental objectives. Reclamation has made costly modifications to dams such as Shasta and Flaming Gorge to achieve environmental goals. There is also a major effort underway among Federal and state agencies and other interest groups to improve environmental and water quality in the delta at the mouth of the Central Valley of California where the San Joaquin and Sacramento rivers flow into San Francisco Bay.

Ironically, Reclamation’s attempts, in partnership with the Fish and Wildlife Service, to use drainage water to support environmental objectives at the Kesterson National Wildlife Refuge in the Central Valley of California resulted in unexpected and difficult environmental problems. The drainage water mobilized and concentrated selenium in the water of the refuge which caused death and deformity among affected animal populations. The selenium issue was a problem, now resolved, that neither Reclamation nor the Fish and Wildlife Service foresaw.

## RECREATION

Reclamation reservoirs provide flatwater recreation opportunities all over the West. While Westerners quickly identified and began to enjoy recreation opportunities on and in the water captured behind Reclamation dams, recreation was not recognized legally as a project use until 1937. Reclamation transferred Lake Mead, behind Hoover Dam, to the National Park Service for recreation management in 1936 and initiated the still-existing pattern of seeking other agencies to manage recreation at Reclamation facilities. That pattern means that today Reclamation directly manages only about one-sixth of the recreation areas on its projects. From the 1930s to the early 1960s, recreation for specific projects was authorized, however, in the mid-1960s, the Congress began to give Reclamation more generalized authorities for funding recreation on all projects. Fishing, hunting, boating, picnicking, swimming, and other recreational opportunities have developed over the years. In addition to flatwater recreation opportunities, many stretches of “blue ribbon” fishing developed all over the West in favorable conditions below Reclamation dams.

In 2010, Reclamation had 289 recreation areas located on about 6.5 million acres of land, most of which are open for public outdoor recreation. In recent years, Reclamation has “reoperated” some facilities seeking to improve fishing and white water recreational opportunities. Three

recreation areas managed by the National Park Service—Lake Roosevelt behind Grand Coulee Dam, Lake Mead behind Hoover Dam, and Lake Powell behind Glen Canyon Dam, as well as the U.S. Forest Service’s Lake Shasta behind Shasta Dam—are among the most prominent National Recreation Areas on Reclamation projects. Other managing partners for recreation areas include other Federal agencies, state agencies, counties, and cities. These partnerships result in millions of recreation days of use on Reclamation projects annually and raise numerous issues in terms of interagency coordination, water quality, public safety, public access, cost-sharing, law enforcement, etc. As water is converted from rural to urban uses in the West, and urban population increases, recreation visits to Reclamation projects are expected to continue to increase.

### **FLOOD CONTROL/DROUGHT BENEFITS**

Flood control is one of the benefits provided on many Reclamation projects. Reclamation operates its facilities to prevent millions of dollars of flood damage. Between 1950 and 1992, Reclamation projects prevented in excess of \$8.3 billion in flood damage.

During periods of drought, Reclamation becomes involved in drought management activities. Reclamation projects have carryover storage which often can provide water during a few consecutive years of drought. In some areas, however, growing demand stresses the water supply even in normal water years. Water shortages, often drought-influenced, will probably increase in the West, thus forcing more effective and efficient use of water supplies. Reclamation drought activities are quite varied, e.g., assisting water users with planning for use and allocation of limited water supplies, participating in cooperative contingency planning for future droughts, water conservation, loans, cooperation in water banking, deepening wells, and water purchases are among the many possible activities.

### **INTERNATIONAL AND OTHER ASSISTANCE**

International assistance is another aspect of Reclamation’s program. Reclamation employees have worked in more than 80 countries providing technical assistance for a wide range of water resources issues, and Reclamation has welcomed more than 10,000 visitors from nearly every country in the world to its facilities. Reclamation routinely provides training programs for foreign visitors. This activity is conducted in accordance with United States policy and in cooperation with the U.S. State Department. Reclamation also provides technical water assistance to various public and private entities within the United States through a variety of programs.

### **RECLAMATION TODAY**

Reclamation currently has more than 180 projects in the seventeen western states which are managed out of over twenty area offices. The area offices are within five regions which are organized around western watersheds. Many projects are actually operated and maintained by the water users. Reclamation’s projects provide agricultural, municipal, and industrial water to about one-third of the population of the West. Farmers on Reclamation projects produce a significant percentage of the value of all crops in the United States, including about 60 percent of vegetables and 25 percent of the fruit and nut crops. Because of continuing initiatives begun under the presidency of

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Bill Clinton, Reclamation's staffing level has trended downward in recent years. In 2010 Reclamation staff was about 29 percent smaller than in 1993. As Reclamation enters into additional partnerships with the beneficiaries of the water and electricity produced on its projects and shifts increasingly to water management activities, Reclamation's staffing levels are expected to shrink even further in the Twenty-First Century.

### SELECTED READINGS

[A larger list of suggested readings may be found in another Bureau of Reclamation leaflet: "Readings in the History of the Bureau of Reclamation" or at <http://www.usbr.gov/history/selectedbibliography.pdf>]

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