

RECLAMATION

Managing Water in the West

Mid-Pacific Region

2012 Report of Accomplishments



U.S. Department of the Interior
Bureau of Reclamation
Mid-Pacific Region

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THE MID-PACIFIC REGION

Foreword

The Bureau of Reclamation's Mid-Pacific Region has continued to make significant advances in recent years toward easing some of the water supply and management challenges for water and power contractors. Even so, much of the water supply in California, and in the bordering areas of Oregon and Nevada, lack historic reliability and in many areas associated ecological systems are in decline.

The Region has completed, or advanced, some short-term and long-term solutions. Those and other solutions are essential to the health of state and local economies, natural resources and the environment. Reclamation remains committed to working with our partners on long-term water supply improvements and environmental restoration in the Region.

The Region's management team continued its focus on prioritizing programs and improving organizational efficiency and effectiveness to meet future needs and projects, while dealing with diverse and complex issues of both changing climate and competing public values. Those improvements have been coupled with a focus on priorities of protecting human health and safety, and developing and maintaining relationships essential to accomplishing the Region's mission.

In successfully obligating the \$370 million program for Fiscal Year 2012 (Oct. 1, 2011 to Sept. 30, 2012) the Region provided funds to maintain water supplies, repair water and power infrastructure, address environmental needs associated with project operations, and improve water efficiency, reuse and recycling.

Developments regarding projects and programs during FY 2012 and early FY 2013 are highlighted in this report.

The Mission

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.

Regional Director Don Glaser

From 2008 through 2012, Don Glaser served as regional director for the Mid-Pacific Region, overseeing management of Reclamation's 11 water projects in an area encompassing the northern two-thirds of California, most of western Nevada, and part of southern Oregon. The Region includes California's Central Valley Project, one of the largest and highest-profile, multi-purpose water projects in the nation.

In December 2012, Reclamation Commissioner Michael Connor announced that Mr. Glaser would accept a move to Denver to work on high priority projects for the commissioner's office, including some in the Mid-Pacific Region.

In May 2008, soon after his appointment as regional director, Mr. Glaser established four priorities that he used as the guide for managing the Region: protect human health and safety, facilitate the efficiency and effectiveness of the organization, develop and maintain relationships, and accomplish necessary tasks. He used those as the foundation for what became nationally recognized achievements in the Region.

Prior Service

Mr. Glaser's service in Reclamation, prior to overseeing the Region, includes 20 years of varied experiences in several positions throughout the West and in Washington, D.C. He served as both deputy commissioner and assistant commissioner for resources management.

Mr. Glaser also spent seven years managing non-profits engaged in water education, open-space preservation, and fish and wildlife conservation and restoration. In addition, he served as the executive



Don Glaser

director for the Presidential Commission on Western Water Policy and the state director for the Bureau of Land Management in Colorado.

In March 2012, while serving as the Region's director, Mr. Glaser was awarded the Department of the Interior's highest recognition, the Distinguished Service Award, for outstanding leadership. He received the award from Department of the Interior Secretary Ken Salazar during a ceremony in Washington, D.C. The award stated, in part, that it was in recognition of Mr. Glaser's "outstanding leadership, professionalism, and contributions to the Department of the Interior in effective water and power management for the Bureau of Reclamation."

David Murillo Named New Director

In December 2012, Commissioner Connor named Deputy Commissioner of Operations David Murillo as the new regional director for the Region.

Commissioner Connor said in a statement: "Mr. Murillo brings into this new position a long



David Murillo

history of working collaboratively with Reclamation's customers and stakeholders. This change will build upon Reclamation's commitment to excellence and public service."

Mr. Murillo has an extensive knowledge of water and related resources policy, water and power system operation and maintenance, and ecosystem recovery. He has held several positions within Reclamation and has varied experience working with Reclamation partners and stakeholders. After joining Reclamation in 2000 as the manager of the Yakima Field Office, Murillo went on to serve as the power manager at Grand Coulee Dam and then as Reclamation's deputy commissioner of operations.

"I am committed to the challenge of maintaining the balance of competing needs for water in the Region, of fostering the relationships and partnerships essential to cooperation and accomplishments, and of carefully managing the natural resources entrusted to us," said Mr. Murillo.

Regional Director's 2012 Report

Overview

Throughout 2012, the Region demonstrated its dedication to managing, developing and protecting water and related resources. Primary measures of that commitment show in the quantities of water delivered for agricultural, urban and environmental uses; as well as in the amount of electricity generated by our hydroelectric powerplants.

The Region's largest water project, the Central Valley Project in California, delivers an annual average of about 5.5 million acre-feet of water to the Sacramento and San Joaquin valleys, farmland in California's central coast region, wildlife refuges, and urban areas in the southern and eastern San Francisco Bay Area. Its 11 hydropower plants generate an annual average of about 4.5 billion kilowatt-hours. The Klamath Project in southern Nevada and northern California delivers an annual average of about 860,000 acre-feet of water a year to agriculture and wildlife refuges. The Newlands Project in western Nevada and eastern California delivers about 180,000 acre-feet of water annually to agriculture.

The Region also worked through partnerships to achieve milestones on essential projects and programs addressing short-term and long-term water supply reliability and environmental restoration. The Region completed two major projects, funded by the 2009 American Recovery and Reinvestment Act: the Delta-Mendota Canal and California Aqueduct Intertie, and the Red Bluff Fish Passage Improvement Project. We advanced another major ARRA project, the Battle Creek Salmon and Steelhead Restoration Project, as well as large river restoration projects such

as those on the San Joaquin and Trinity rivers.

In July 2012, the Department of the Interior and the state of California jointly proposed new intake and conveyance facilities through the Sacramento-San Joaquin Delta for public consideration and environmental review. Secretary Salazar and California Gov. Edmund G. Brown Jr. said California's water system is unsustainable environmentally and economically and that the Bay-Delta Conservation Plan, including the proposed Delta conveyance facility, was part of a comprehensive solution to achieve a reliable water supply for California and a healthy Bay-Delta ecosystem.

The Region's 2012 accomplishments include advancing the restoration and mitigation goals of the Central Valley Project Improvement Act with fisheries, wildlife refuge and land conservation programs; as well as taking steps to address climate change. We also partnered to increase water storage with the Los Vaqueros Reservoir Expansion Project, to advance a \$1 billion project to improve safety at Folsom Dam in central California, to bring additional hydroelectric generation online with a small powerplant on an irrigation canal in southern Oregon, and to continue the state of California's management of recreation facilities at two central California locations.

Through the WaterSMART program, the Region contributed millions of dollars to dozens of local water recycling and reuse projects.

Infrastructure Projects

The Intertie, which links two major federal and state canals in the Central Valley, improves operational flexibility and more efficiently delivers water south of

the Delta. Reclamation provided nearly \$16 million in ARRA funds, which combined with other funding sources, made it possible to break ground in October 2010 for the \$28 million project to construct the Intertie between the federal Delta-Mendota Canal and the state California Aqueduct. The project, located in Alameda County, will potentially increase average annual deliveries to the CVP by as much as 35,000 acre-feet by addressing conveyance conditions in the DMC that restrict use of the nearby C. W. "Bill" Jones Pumping Plant to less than its design capacity. (See pages 20-21.)

The Red Bluff Fish Passage Improvement Project in Northern California is a \$190 million pumping plant project that includes about \$115.5 million in funds from ARRA. The pumping plant, screened to protect fish, conveys water from the Sacramento River to the Tehama-Colusa and Corning canals. The plant replaced the Red Bluff Diversion Dam that created a barrier to migrating fish, some of which are listed under the Endangered Species Act. The diversion dam gates have been placed in the open position for unimpeded migration of fish. The new pumping plant ensures continued water deliveries to farmlands. (See pages 22-23.) The Battle Creek Salmon and Steelhead Restoration Project in Northern California is among the largest cold-water anadromous fish restoration efforts in North America. Facility improvements, and habitat restoration and enhancement, will enable safe passage, growth and recovery for threatened and endangered Chinook salmon and Central Valley steelhead. Restoration along 48 miles of Battle Creek and its tributaries, which is on schedule for completion in 2014, includes construction of fish screens and ladders on three hydropower diversion dams. (See pages 26-27.)

MID-PACIFIC REGION ORGANIZATION

Bureau of Reclamation

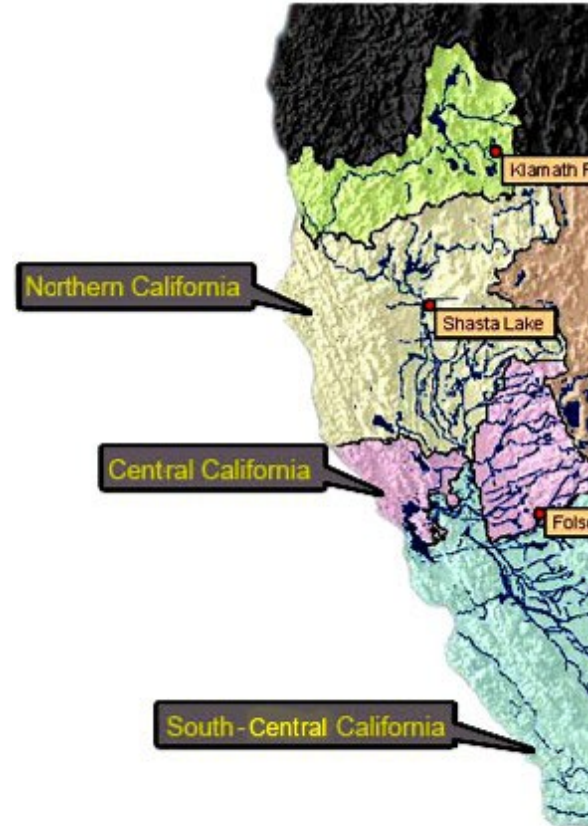
President Theodore Roosevelt signed the Reclamation Act in 1902, creating the agency that would become the Bureau of Reclamation. The agency’s initial mission: Develop and provide water for the 17 semi-arid western states. Reclamation has built 475 major structures, including Folsom Dam on the American River and Shasta Dam on the Sacramento River.

Mid-Pacific Region

The Mid-Pacific Region, one of five Reclamation regions, covers the northern two-thirds of California, most of western Nevada and part of southern Oregon. The Region fulfills obligations for water delivery for agriculture and urban uses, power generation, water conservation, water recycling and reuse, and protecting natural and cultural resources. The Region develops partnerships with customers, states, and Native American tribes; and addresses competing needs for limited water resources.

Mid-Pacific Region Headquarters Office

The Regional Director’s Office in Sacramento is the lead office for the Region and includes the regional director and deputy regional director, as well as the assistant regional director for business services and the assistant regional director of technical services.



Mid-Pacific Region Areas and Offices

Within Region Headquarters	
• <i>Acquisition Services</i>	• <i>Planning</i>
• <i>Administrative Services</i>	• <i>Program Coordination Office</i>
• <i>Design and Construction</i>	• <i>Public Affairs</i>
• <i>Environmental Affairs</i>	• <i>Resources Management</i>
• <i>Equal Employment Opportunity</i>	• <i>Safety, Health, and Security</i>
• <i>Financial Management</i>	• <i>San Joaquin River Restoration Program</i>
• <i>Human Resources</i>	
• <i>Information Technology</i>	

Area Offices

Klamath Basin Area Office

The office, in Klamath Falls, Ore., operates the Klamath Project, which spans the Oregon-California border. Two main sources supply water for the project: The Upper Klamath Lake and Klamath River; and Clear Lake Reservoir, Gerber Reservoir, and Lost River.



Northern California Area Office

The office, at Shasta Dam, north of Redding, manages Reclamation operations from north of Sacramento to near the California-Oregon border. It is responsible for the Central Valley Project's Shasta-Trinity and Sacramento River divisions, which include Shasta Dam, powerplant and reservoir.

Central California Area Office

The office, at Folsom Dam, near Sacramento, manages Reclamation activities in 12 counties, including the CVP's American River and East Side divisions, the Auburn Folsom South Unit and the Solano Project's Lake Berryessa. The office's area of responsibility also encompasses Folsom Lake and New Melones reservoirs.

South-Central California Area Office

The office, in Fresno, manages Reclamation activities from the Sacramento-San Joaquin Delta, south to the Tehachapi Mountains and the southern coastal counties of Santa Barbara and Ventura, including the CVP's Delta, San Felipe and Friant divisions and the San Luis Unit.

Lahontan Basin Area Office

The office, in Carson City, Nev., manages Reclamation activities in northern Nevada and eastern California, including the Truckee, Carson, and Walker River drainages on the eastern slope of the Sierra Nevada range. The office operates the Newlands, Washoe, Humboldt and Truckee River storage projects.

Specialized Offices

Central Valley Operations Office

The office, together with the state of California, manages daily operations of the CVP and the State Water Project from a joint operations center in Sacramento. The center coordinates releases from upstream reservoirs and Delta exports to ensure that each project achieves its share of benefit from joint water supplies.

Mid-Pacific Construction Office

The office in Willows, Calif., manages construction programs and performs preconstruction work, onsite construction management, and construction contract administration throughout the Region.

Bay-Delta Office

The office focuses on issues associated with the San Francisco Bay/Sacramento-San Joaquin Delta. The office centralizes program management to help ensure that Reclamation effectively responds to the emerging needs of the Bay-Delta.

MID-PACIFIC REGION HIGHLIGHTS

Overview

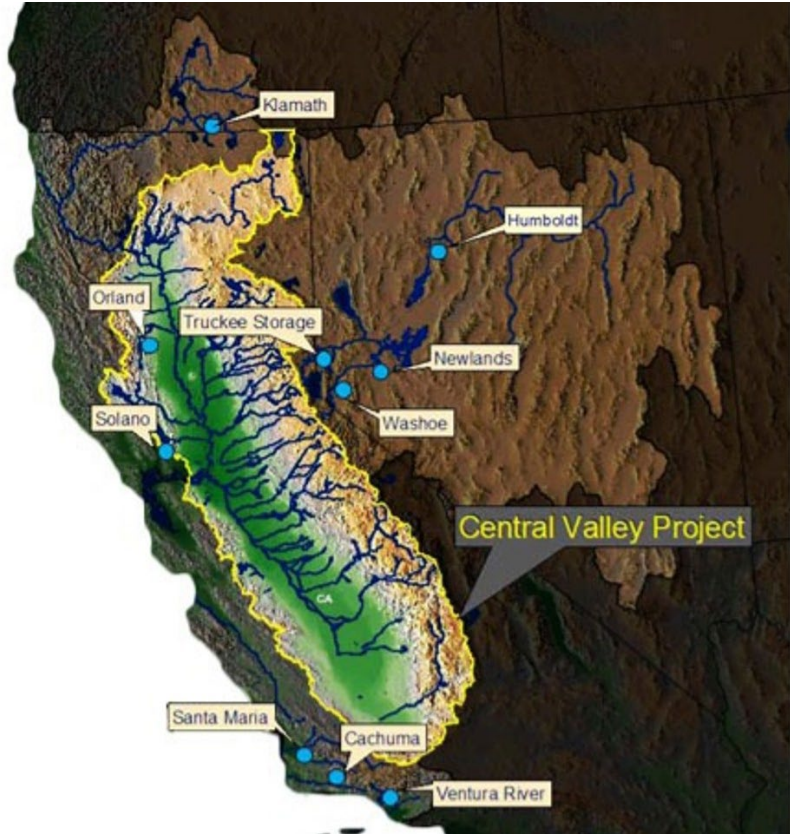
Eleven Water Projects Serve a Diverse Region

The Mid-Pacific Region encompasses 11 water projects – ranging from relatively small to among the largest in the nation. The unique and essential projects, as shown on the map, are spread across southern Oregon, western Nevada and California.

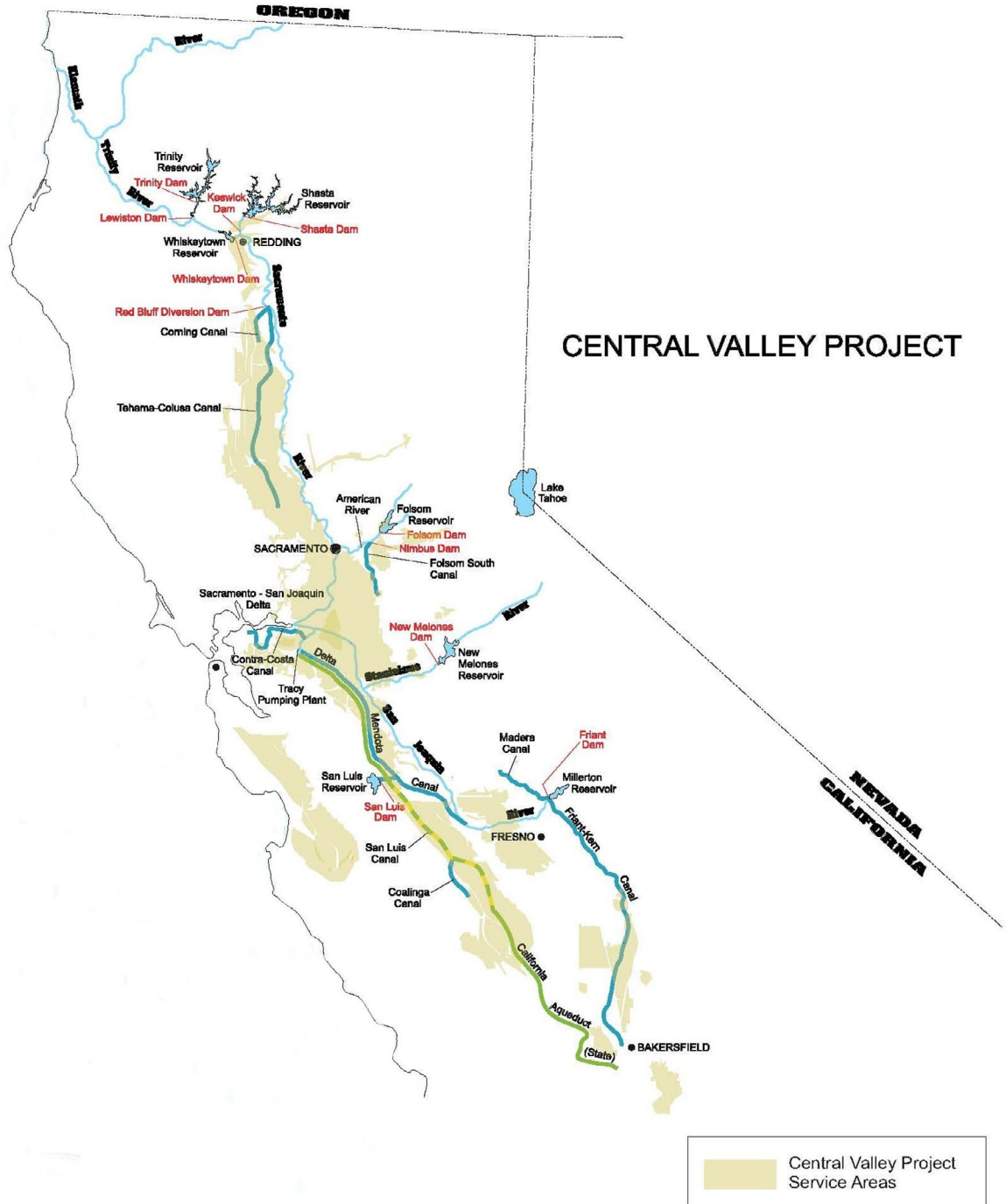
The Region's projects provide water for agricultural, municipal, industrial and environmental purposes through complex processes, driven by numerous factors, including hydrology, regulations, court decisions, environmental considerations, operational limits, input from other agencies and organizations, and a changing climate.

The Region's multi-purpose network of dams, reservoirs, canals, hydroelectric powerplants and other facilities include the Central Valley Project, one of the world's largest and best-known systems for storing and delivering water. It serves one of the most productive agricultural areas in the United States. Shasta Dam forms the CVP's largest reservoir, near Mount Shasta in Northern California.

The Region's water projects are detailed on pages 9-19.



Mid-Pacific Region water projects



Central Valley Project map



The Central Valley Project

Overview

The Central Valley Project extends 400 miles, from the Cascade Range in the north to the Tehachapi Mountains near Bakersfield in the south. The CVP's complex, multi-purpose network of dams, reservoirs, canals, hydroelectric powerplants and other facilities across northern and central California serve agriculture, municipal and industrial needs, and fish and wildlife, in the semi-arid Central Valley.

The project is a major asset to California's economy, providing water for most of the top agricultural producing counties in the nation's leading farm state. The California Department of Food and Agriculture reported in its latest California Agricultural Highlights publication that farm production in the state totals more than \$36 billion annually. About a third of that production, or about \$12 billion, came from the Central Valley.

The CVP provides flood protection for the Central Valley and supplies domestic and industrial water in

the valley, as well as to major urban centers in the Sacramento and San Francisco Bay areas.

The project also provides water to restore and protect fish and wildlife, and to enhance water quality. It is a major source of water for 19 wildlife refuges. Five of the refuges are in the Sacramento Valley and 14 are in the San Joaquin Valley.

Construction of major CVP facilities began in 1938 with breaking of ground for Shasta Dam on the Sacramento River near Redding in Northern California. Over the next five decades, the project was expanded into a system of 20 dams and reservoirs that together can hold nearly 12 million acre-feet. The CVP includes 500 miles of canals and aqueducts and 11 hydroelectric powerplants. In Sacramento, the Central Valley Operations Office and the California Department of Water Resources coordinate operations of the CVP and California's companion water delivery system, the State Water Project.



Shasta Dam in Northern California is a key feature of the Central Valley Project. This employee contest photo was taken by Scott Dethlefsen.

CVP Facilities/Operation

CVP facilities include reservoirs on several major rivers, including the Trinity, Sacramento, American, Stanislaus and San Joaquin rivers.

In Northern California, Shasta Dam is situated on the Sacramento River. Nearby is Trinity Dam on the Trinity River. Water stored in Trinity Reservoir and smaller reservoirs is diverted through a system of tunnels and powerplants into the Sacramento River. Water from all these reservoirs, and others operated by the State Water Project, eventually flow into the Sacramento River.

To the south, the American River, below Folsom Dam and Reservoir, joins the Sacramento River. Some CVP contractors, water rights contractors and water rights holders divert water directly from the Sacramento and American rivers.

The Sacramento River and others carry water to the Sacramento-San Joaquin Delta, where the C.W. “Bill” Jones Pumping Plant, at the southern end of the Delta, lifts water into the Delta-Mendota Canal. The canal delivers water to CVP contractors and exchange contractors on the San Joaquin River and water rights contractors on the Mendota Pool.

CVP water is also conveyed to San Luis Reservoir for deliveries to project contractors through the San Luis Canal. Water from San Luis Reservoir is also conveyed through the Pacheco Tunnel to project contractors in Santa Clara and San Benito counties.

The CVP delivers water from Friant Dam on the San Joaquin River to project contractors serviced by the Madera and Friant-Kern canals. Water is stored in New Melones Reservoir for water rights holders in the Stanislaus River watershed and CVP contractors in the northern San Joaquin Valley.

The CVP and the separate State Water Project convey water in the Sacramento River and the Delta. The project’s reservoir operations are coordinated to obtain maximum yields and deliver water into the main river channels and canals of the projects in the most efficient and environmentally sensitive manner.

CVP irrigation and municipal water is delivered in accordance with long-term contracts negotiated with irrigation districts, cities and other users. Water is also delivered to wildlife refuges in accordance with the Central Valley Project Improvement Act and its programs to restore and protect wildlife.

CVP Reservoir Capacities and End of Water Year (Sept. 30, 2012) Carryover Storage In Million Acre-feet								
Reservoirs	Annual Carryover Storage Comparisons						15-Year Average Carryover Storage 1997-2012	
	CVP Reservoirs and Capacities	2012 Carryover Volume	% of Reservoir Capacity	% of 15-year Average	2011 Carryover Volume	% of Reservoir Capacity	% of 15-year Average	Volume
Shasta, 4.552	2.6	57	96	3.3	73	124	2.7	59
New Melones, 2.42	1.5	62	97	2.1	85	128	1.6	66
Trinity, 2.448	1.8	74	108	2.2	89	135	1.7	69
Folsom, .977	.45	46	84	.74	76	135	.54	55
Millerton, .52	.32	61	124	.36	68	148	.26	50
Federal San Luis, .966	.25	26	78	.64	67	268	.32	33
Total, 11.8	6.9	58	98	9.3	78	135	7.0	59

Comparison of Previous End of Year (Carryover) Storage					
Million Acre-feet					
2012	2011	2010	2009	2008	1997 (Lowest Carryover)
6.9	9.3	7.4	4.8	4.1	1.5

Major CVP Canals		
Canal	Length (miles)	Capacity (cubic feet per second)
Corning	21.0	500
Tehama-Colusa	110.9	2,530
Contra Costa	47.7	350
Folsom South	26.7	3,500
Delta-Mendota	117.0	4,600
Friant-Kern	151.8	5,000
Madera	35.9	1,250
Coalinga	11.6	1,100
San Luis (Joint Federal/State)	102.5	13,100

Major CVP Canals			
Dam and Reservoir	River System	Storage Capacity (Acre-Feet)	Active Storage Capacity* (Acre-Feet)
Shasta Dam and Reservoir	Sacramento	4,552,000	3,964,960
Trinity Dam and Reservoir	Trinity	2,448,000	2,135,010
Folsom Dam and Reservoir	American	977,000	894,000
New Melones Dam and Reservoir	Stanislaus	2,420,000	2,417,000
Friant Dam and Millerton Reservoir	San Joaquin	520,000	433,800
San Luis Dam and Reservoir	Offstream Storage	2,039,000 (Total storage) 966,000 (Federal share)	1,961,320 (Total Active Storage)

*Active Storage Capacity - The reservoir capacity assigned to regulate reservoir inflow for irrigation, power, municipal and industrial use, fish and wildlife, navigation, recreation, water quality, and other purposes. It does not include exclusive flood control or joint use capacity. It extends from the top of the active conservation capacity to the top of the inactive capacity (or dead capacity where there is no inactive capacity).

CVP Divisions and Units

The complex operations of the CVP are organized into divisions and units: The Shasta Division in Northern California that includes Shasta Reservoir on the Sacramento River and the nearby Trinity Division that directs water into the Sacramento River; the Sacramento River Division, Sacramento Canals Unit; the American River Division near Sacramento that includes Folsom Reservoir; the Delta Division,

which includes the C.W. “Bill” Jones Pumping Plant and the Delta-Mendota and Conta Costa canals; the East Side Division, New Melones Unit that includes New Melones Reservoir on the Stanislaus River in the San Joaquin Valley; the Friant Division that includes Millerton Lake on the San Joaquin River; the West San Joaquin Division, San Luis Unit, that includes San Luis Reservoir; and the San Felipe Division that serves the central coastal portion of California.

CVP Water Deliveries

The CVP’s water comes from rain and runoff from the Sierra Nevada snowpack flowing into reservoirs. Releases from dams pass through rivers and canals to the Central Valley, serving contractors in the northern half, referred to as the Sacramento Valley, and the southern half, known as the San Joaquin Valley.

The CVP has long-term agreements to supply water to more than 250 contractors in 29 of California’s 58 counties. Deliveries by the CVP include providing an annual average of 5 million acre-feet of water for farms; 600,000 acre-feet of water for municipal and industrial uses (enough water to supply about 2.5 million people for a year); and water for wildlife refuges and maintaining water quality in the Delta.



Delta-Mendota Canal in the San Joaquin Valley.

CVP Hydroelectric Power Production and Benefits

There are 11 hydroelectric powerplants in the CVP with a combined capacity of about 2,100 megawatts. (A megawatt is enough to supply nearly 1,000 homes.)

CVP powerplants produce about 4.5 million megawatt hours in an average water year. (A megawatt hour is continuous production of one megawatt over an hour.)

About a third of the electricity generated by the CVP is used for pumping water throughout the project. The rest is made available to the Western Area Power Administration for sale and distribution in the western United States.

CVP Powerplants and Capacities (in megawatts)

Northern California Area Office (NCAO)

Shasta Dam	710 MW
Trinity Dam	140 MW
Judge Francis Carr	154 MW
Spring Creek	180 MW
Keswick Dam	105 MW
Lewiston Dam	.350 MW

Central California Area Office (CCAO)

Folsom Dam	207 MW
Nimbus Dam	17 MW
New Melones Dam	383 MW

South-Central California Area Office (SCCAO)

O’Neill	14.4 MW
San Luis	202 MW



The C.W. "Bill" Jones Pumping Plant is located at the southern end of the Sacramento-San Joaquin Delta.

CVP's Delta Pumping Plant

The C.W. "Bill" Jones Pumping Plant, near Tracy, Calif., at the southern end of the Delta, lifts water nearly 200 feet through 15-foot diameter pipes into the Delta-Mendota Canal. At full capacity, with the Intertie operating, the plant can pump 4,600 cubic feet per second, which is 9,100 acre-feet per day.

The canal delivers water to CVP water service contractors, exchange contractors and wildlife refuges. The contractors provide agricultural and urban water service in the western San Joaquin Valley, and portions of San Benito and Santa Clara counties. The CVP water is also conveyed with pumping units to the San Luis Reservoir for deliveries to CVP contractors through the San Luis Canal.

CVP's Tracy Fish Collection Facility

The Tracy Fish Collection Facility is a system of louvers, bypasses and holding tanks operated to protect and salvage fish from the operations of the nearby Jones pumping plant.

The facility collects Delta fish species as a primary mitigation feature for the pumping plant and returns them to the Delta. Threadfin shad, striped bass, and American shad made up the bulk of the collection. There are about 50 species of fish collected at the facility, including listed species such as the Delta smelt, winter-run and spring-run Chinook salmon, steelhead and green sturgeon.



The Tracy Fish Collection Facility, near the C.W. "Bill" Jones Pumping Plant, helps protect fish.

CVP's Agricultural Benefits

Based on a California Department of Food and Agriculture report, the following agricultural production occurs annually on acreage served by the CVP:

- Acreage serviced, 3 million
- Principal crops, 24 million tons
 - Field crops, 10 million tons
 - Vegetable/melons, 9 million tons
 - Fruit/nut crops, 5 million tons
- Largest producing counties include:
 - Fresno: Grapes, almonds, poultry, dairy, tomatoes
 - Tulare: Oranges, cattle, grapes, alfalfa, dairy
 - Kern: Grapes, citrus, almonds, carrots, dairy
 - Merced: Chickens, almonds, cattle, potatoes, dairy
 - Stanislaus: Almonds, chickens, cattle, dairy
 - San Joaquin: Grapes, walnuts, cherries, almonds, dairy
 - Kings: Dairy, cotton, cattle, alfalfa, tomatoes



Farmworkers harvest produce in the San Joaquin Valley.

CVP's Support of Wildlife Refuges

The CVP, under terms of the Central Valley Project Improvement Act, delivers water for 19 wildlife refuges in the Sacramento and San Joaquin valleys. The refuges provide wetlands habitat, and are essential resting and feeding areas for migratory birds on the Pacific Flyway.

In the Sacramento Valley, there are five refuges: the Sacramento, Delevan, Colusa and Sutter national wildlife refuges, and the Gray Lodge Wildlife Area.

San Joaquin Valley refuges total 14. There are seven in the San Luis National Wildlife Refuge Complex, the San Luis, West Bear Creek, East Bear Creek, Freitas and Kesterson units, the Merced National Wildlife Refuge, and the Los Banos Wildlife Area; in the North Grasslands Wildlife Area Complex, there are five refuges, the China Island and Salt Slough units, the Mendota and Volta wildlife areas, and the Grasslands Resource Conservation District; and in the Tulare Lake Basin, there are two refuges, the Kern and Pixley national wildlife refuges.



Birds feed and rest at a Central Valley wildlife refuge.

Other California Projects

Northern California

Orland

The Orland Project, which is located in the Sacramento Valley about 100 miles north of Sacramento, collects runoff from the eastern Coast Range. The project provides irrigation water to about 20,000 acres of farmland. The project is comprised of East Park Dam on Little Stony Creek and Stony Gorge Dam on Stony Creek. It also includes Rainbow and Northside diversion dams.

Central California

Solano

The Solano Project, which is located northeast of San Francisco Bay on Putah Creek, collects runoff from the eastern Coast Range. The project provides irrigation water to about 95,000 acres of farmland and municipal and industrial water to the cities of Vallejo, Vacaville, Fairfield, Benicia and Suisun. The project is comprised of Lake Berryessa, behind Monticello Dam. It also includes Putah Diversion Dam, Putah South Canal, Green Valley Conduit and Terminal Dam and Reservoir.

Three California Seacoast Projects: Capturing Seasonal Floodwaters for Beneficial Uses

Cachuma

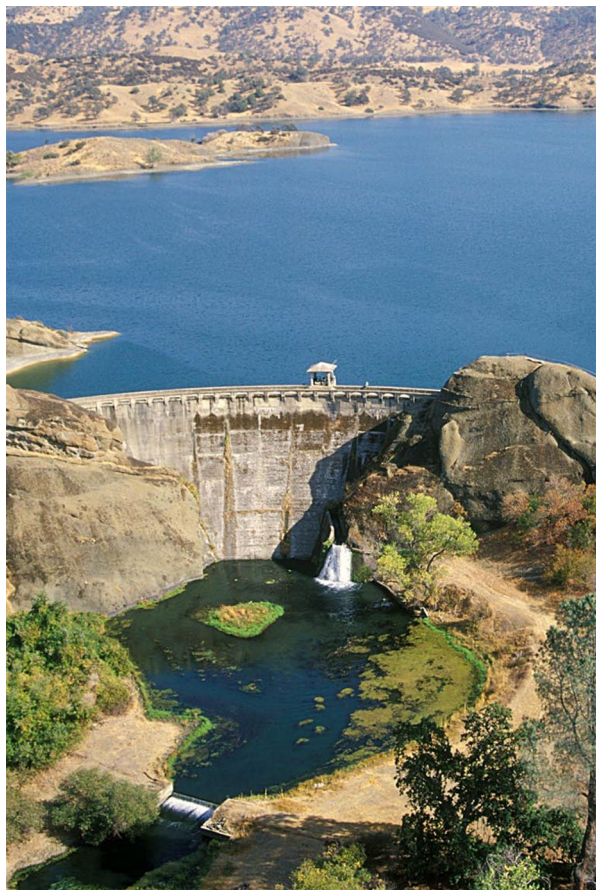
The Cachuma Project is located near Santa Barbara on the Santa Ynez River. The project provides irrigation water for about 35,000 acres of farmlands and municipal and industrial water for the cities of Santa Barbara, Goleta, Montecito and Carpinteria. The project is comprised of Lake Cachuma behind Bradbury Dam, Lauro Dam and Reservoir, Ortega Dam and Reservoir, Carpinteria Dam and Reservoir, Glen Anne Dam and Reservoir, Tecolote Tunnel, South Coast Conduit and Sheffield Tunnel.

Santa Maria

The Santa Maria Project is located about 150 miles northwest of Los Angeles on the Cuyama River. The project provides irrigation water for about 35,000 acres of farmland. It is comprised of Twitchell Dam and Reservoir.

Ventura River

The Ventura River Project is located about 60 miles northwest of Los Angeles on the Ventura River. The project provides irrigation water to about 7,000 acres of farmland and supplies water to about 60,000 municipal and industrial users. It is comprised of Casitas Dam and Reservoir, Robles Diversion Dam and Fish Passage Facility, and Robles-Casitas Canal.



East Park Dam in the Orland Project.



Monticello Dam, with a morning glory spillway, in the Solano Project.

Nevada Projects

Newlands

The Newlands Project is located in western Nevada and the eastern Sierra Nevada mountains of California. The project provides irrigation water from the Truckee and Carson rivers for about 57,000 acres of farmland in the Lahontan Valley, near Fallon and Fernley, in western Nevada. The project also serves the Pyramid Lake Paiute Indian Tribe. It is comprised of the Lahontan Dam and Reservoir, Lake Tahoe Dam, Derby Diversion Dam, Truckee Canal and Carson River Diversion Dam.

Washoe

The Washoe Project is located in west-central Nevada and eastern California. The project provides water from the Truckee and lower Carson rivers to benefit fish and

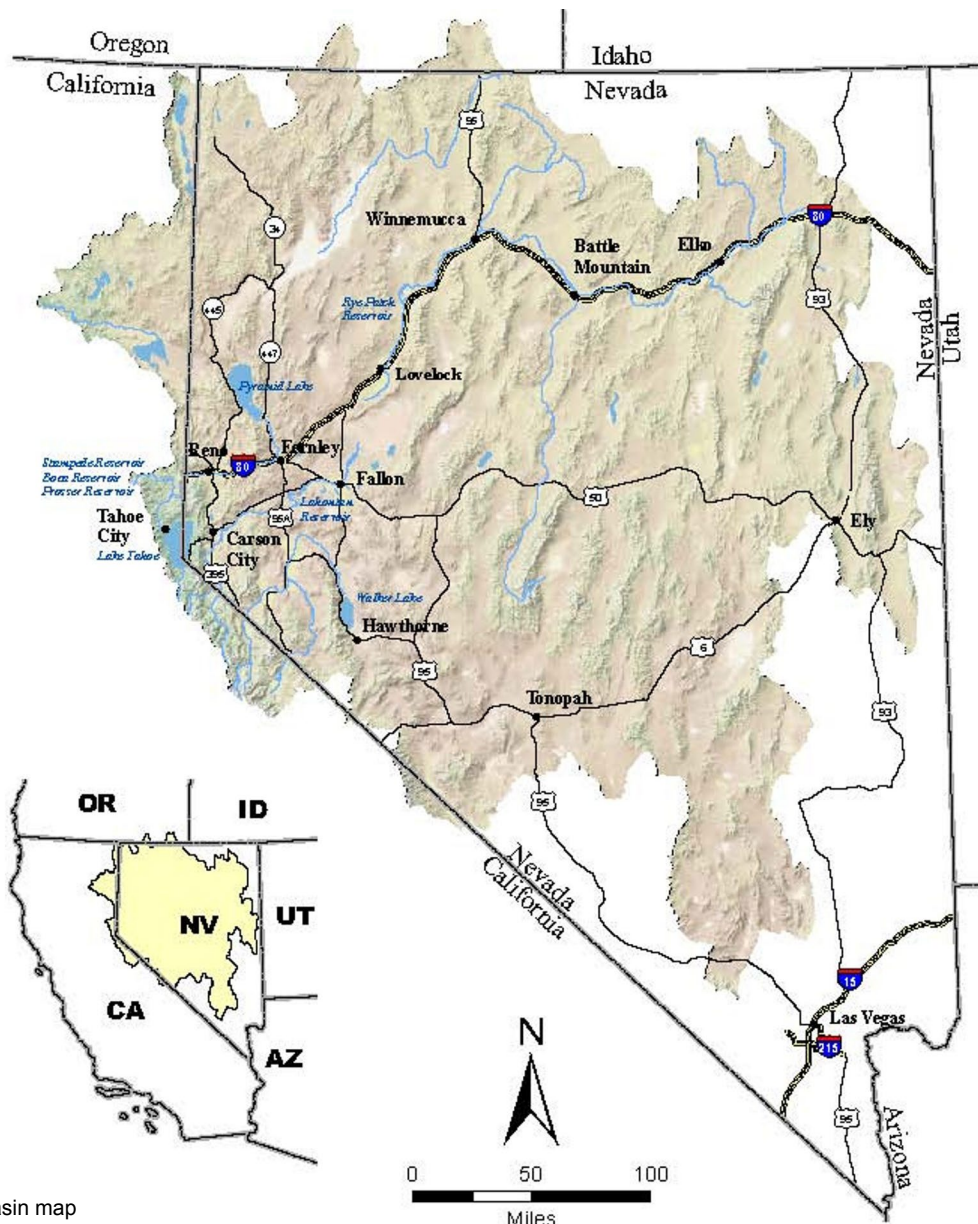
wildlife. It is comprised of Prosser Creek Dam and Reservoir, Stamped Dam and Reservoir, Marble Bluff Dam and Pyramid Lake Fishway.

Truckee

The Truckee Storage Project is located in western Nevada on the Little Truckee River. The project provides irrigation water for about 29,000 acres of farmland in Truckee Meadows, surrounding Reno and Sparks. It is comprised of Boca Dam and Reservoir.

Humboldt

The Humboldt Project is located in northwestern Nevada, near Lovelock, on the Humboldt River. The project provides irrigation water for about 45,000 acres of farmland. It is comprised of the Rye Patch Dam and Reservoir.



Lahontan Basin map

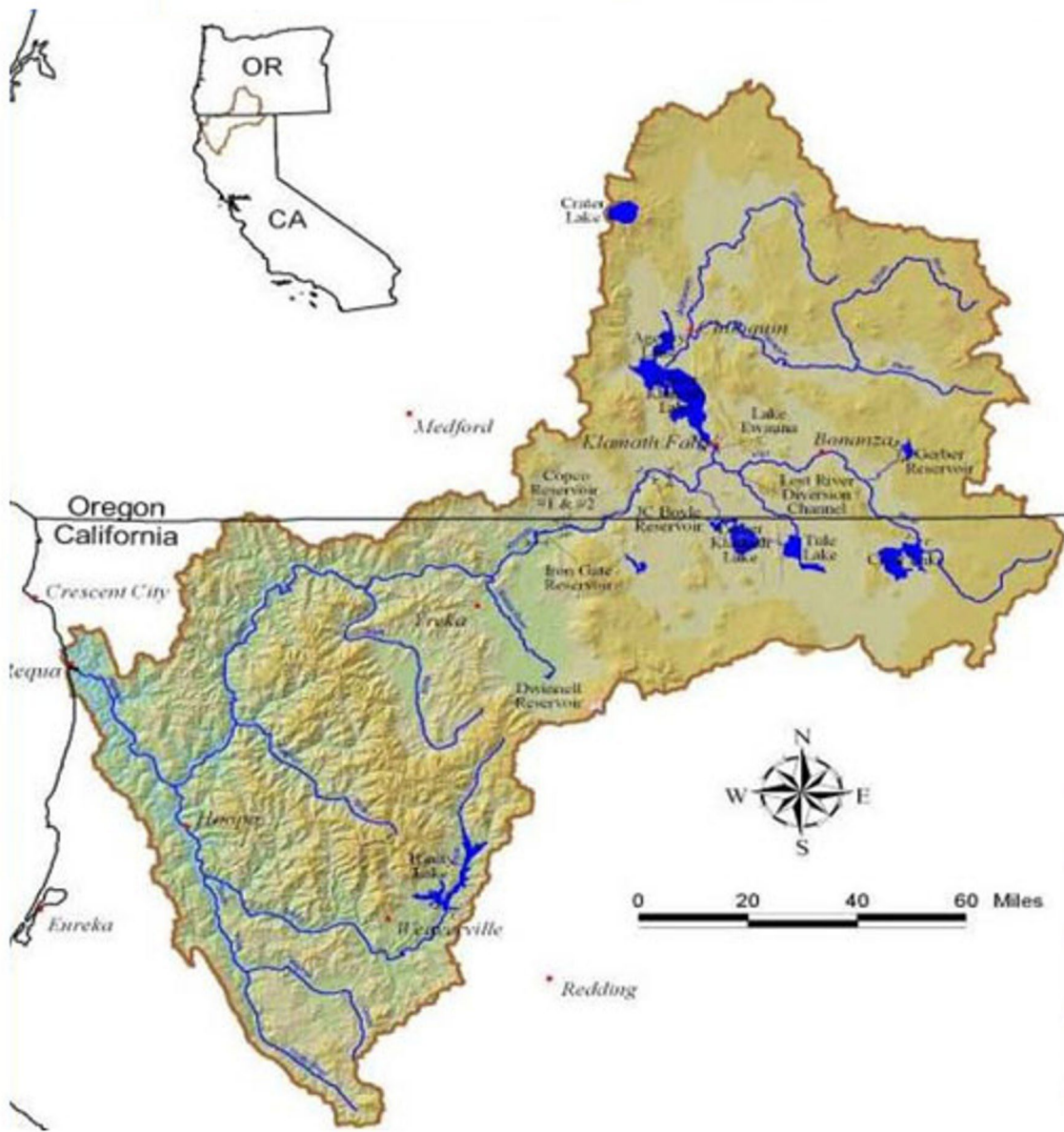
Oregon Projects

Klamath

The Klamath Project is located in southern Oregon and northern California. The project provides water from the Klamath River and Lost River for irrigation of about 210,000 acres of farmland. It is comprised of Clear Lake Dam and Reservoir, Gerber Dam and Reservoir, Link River Dam, Lost River Diversion Dam, Anderson-Rose Diversion Dam, Malone Diversion Dam, Miller Diversion Dam, Tule Lake Tunnel and Klamath Straits Drain.



Anderson-Rose Diversion Dam in the Klamath Project.



Klamath map

Recreation

The Region has more than 60 recreation areas, including reservoirs, campgrounds, wildlife refuges, hiking trails and fish hatcheries.

The facilities provide a wide range of recreation opportunities such as boating, camping, picnicking, horseback riding, hiking, fishing, biking, rock climbing, sightseeing and viewing of wildlife.

Their locations range from areas near cities to rugged, remote sites. Some are managed by the Region; others by federal, state and local government partners, among them, the California Department of Parks and Recreation, the Nevada Division of State Parks, the California Department of Fish and Game, and the U.S. Forest Service.

The Region directly manages recreation in five areas:

- East Park Reservoir and Stony Gorge Reservoir (Northern California Area Office).
- Folsom-South Canal Recreation Trail, and Berryessa and New Melones reservoirs (Central California Area Office).

The Region's other major recreational sites include:

- Shasta, Keswick, Trinity and Whiskeytown reservoirs in Northern California.
- Millerton Reservoir in the central Sierra Nevada foothills near Fresno, Calif.
- Folsom, Natoma and Clementine reservoirs and the Auburn Project Lands near Sacramento, Calif.
- San Luis Reservoir near Los Banos, Calif.
- Boca Reservoir near Truckee, Calif.
- Rye Patch Reservoir near Lovelock, Nev.

The Region's educational offerings include tours of Shasta Dam in Northern California. The tours include an elevator ride down inside the dam, where guides discuss the construction, history and purpose of the project; and a look at the powerplant, California's largest hydroelectric generating station.

Educational offerings in Central California include the American River Water Education Center near Folsom Reservoir. The center's mission is to increase the public's knowledge of the American River watershed -- both the natural features and human interactions within the watershed.

Region facilities also provide interpretive activities such as those at New Melones Reservoir in the central Sierra Nevada foothills and Lake Berryessa in Napa County.



Fishing enthusiasts at Nimbus Dam. Employee contest photo by Joyce Fernandez.

Bureau of Reclamation Commissioner Michael Connor addresses the audience at the dedication of the Delta-Mendota Aqueduct Intertie Project. The ceremony was held inside the pumping plant structure.



MAJOR PROJECTS COMPLETED

Delta-Mendota Canal/California Aqueduct Intertie Project

The Mid-Pacific Region completed the Delta-Mendota Canal/California Aqueduct Intertie Project in 2012, linking the two canals to improve operational flexibility and provide more efficient delivery of water to the San Joaquin Valley.

The Intertie in Alameda County, west of Tracy, will potentially increase average annual deliveries of the Central Valley Project by as much as 35,000 acre-feet by addressing conveyance conditions in the DMC that restrict use of the nearby C. W. “Bill” Jones Pumping Plant to less than its design capacity.

The DMC is the primary federal delivery facility conveying water to CVP contractors in the San Joaquin Valley. The State Water Project’s California Aqueduct operates in much the same way. The Intertie allows more conveyance to storage south of the Sacramento-

San Joaquin Delta, provides redundancy in the distribution system in case of emergency, and makes maintenance and repair work less disruptive to water deliveries.

The project was dedicated in a May 2 ceremony attended by Reclamation Commissioner Michael Connor, who commended the partnership that made the project possible.

“Our goal is to keep moving these interim solutions forward, improving the situation from a water supply perspective and an environmental perspective,” said Connor.

Reclamation’s partners in the project were the California Department of Water Resources, which operates the State Water Project, and the San Luis and Delta-Mendota Water Authority. Operation and maintenance responsibility for the Intertie was transferred to the San Luis and Delta-Mendota Water Authority in July 2012.

The Department of the Interior committed \$15.8 million from the American Recovery and Reinvestment Act to construct the Intertie. CALFED, a multi-agency program, provided \$8.8 million. The remaining funding came from contributed funds and Reclamation's budget. The total project cost was \$29 million.

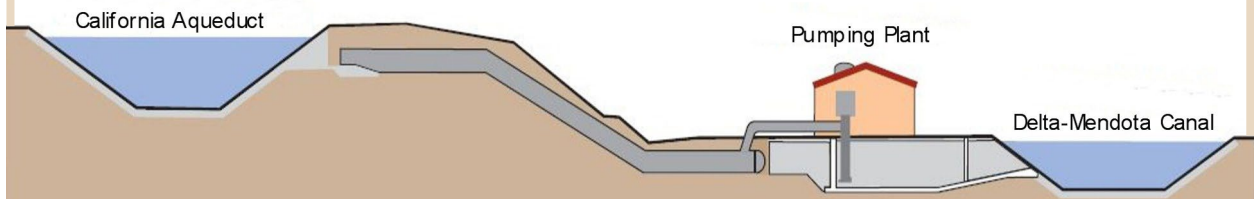
The two-way Intertie was constructed, beginning in 2010, at a point where the federal and state canals are just 500 feet apart, with the state canal 50 feet higher in elevation than the federal canal. With the canals now linked via two 108-inch diameter pipelines, Intertie operators can allow up to 900 cfs of water to flow from the state canal, downhill to the federal canal, via gravity flow. In a reversal of operations, if desired, Intertie operators can pump up to 468 cubic feet per second of water uphill from the federal canal to the state canal.

Construction involved removing a section of the DMC's concrete liner, installing a cofferdam, and constructing an underground sump structure to collect and channel water from the canal. Above ground, workers erected a pump house and installed four sets of 1,000-horsepower motors and pumps, each with a capacity of 117 cfs. Crews also constructed a 4.5-mile overhead 69-kilovolt power transmission line from a Tracy substation to the site.

On the California Aqueduct side of the project, workers installed a cofferdam, then removed a section of concrete liner and excavated about 25 feet for a turnout structure. Crews completed the structure's two reinforced concrete bays and laid the twin pipes to connect the canals.



The photo above and the diagram below show the Intertie and how the facility functions. On the left side of both the photo and diagram is the California Aqueduct and on the right side is the federal Delta-Mendota Canal. The building next to the DMC is a pumping plant. Water can flow downhill through underground pipes (shown in the diagram) from the higher California Aqueduct to the DMC. The pumping plant also can transfer water from the DMC, uphill, to the California Aqueduct.



Red Bluff Fish Passage Improvements/Pumping Plant

The Mid-Pacific Region worked through 2012 on construction of the Red Bluff Fish Passage Improvement Project near Red Bluff in Northern California, completing a new pumping plant and allowing the Red Bluff Diversion Dam gates to be permanently opened. The completion of the project represents the culmination of decades of efforts by various entities to find a balanced solution that improves fish passage and the reliability of irrigation water to highly productive farmland.



View of the screen and cleaner structure show the immense size of the project.

The improvement was required by the Central Valley Project Improvement Act of 1992 and reaffirmed by the National Marine Fisheries Service's 2009 Biological Opinion for operation of the Central Valley Project, which mandated an alternative to Red Bluff Diversion Dam and raising of the gates year-round by 2012.

The existing Red Bluff Diversion Dam, when its gates were down, conveyed water from the Sacramento River into the Tehama-Colusa and Corning irrigation canals. But this created a barrier to migrating fish, some of which are listed under the Endangered Species Act.

The Red Bluff Diversion Dam, completed in 1964, contains a series of 11 gates that, when lowered, provided for gravity diversion of irrigation water from the Sacramento River into the Tehama-Colusa and Corning canals. The Red Bluff Diversion Dam had been an impediment to upstream and downstream fish migration, and a significant portion of the Sacramento River spawning habitat for endangered salmon and steelhead upstream of the dam. Adult fish moving

upstream had difficulty finding and using the ladders for passage over the dam, and juveniles migrating downstream through the dam become disoriented by the turbulence, resulting in significant mortality from predator fish. The main species of concern were the winter- and spring-run Chinook salmon, Central Valley steelhead and green sturgeon.

The fish passage improvement project involved construction of a pumping plant, screened to protect fish, which conveys water from the Sacramento River to the irrigation canals. The pumping plant has replaced the diversion dam. The dam's gates have been permanently placed in the open position for free migration of fish.

The new pumping plant ensures continued water deliveries to 150,000 acres of farmland throughout a four-county area, served by 17 water districts.

The \$185 million in funding for the project includes \$115.7 million from the 2009 American Recovery and Reinvestment Act, the largest single outlay of ARRA funding in the nation by the Department of the Interior.

During 2012, construction was completed on key components such as the pumping plant intake; the pumping plant itself, which included nine pumps that together have a pumping capacity of 2,000 cubic feet per second; an 1,118-foot-long fish screen structure; a canal siphon; a discharge conduit; and a 660-foot-long bridge that allows maintenance workers access to the project.

Workers are restoring the areas that were affected by construction. Earth that was moved is being returned to its natural shape and vegetation is being planted to return the region to its former condition.



Boat heads toward the open gates of the Red Bluff Diversion Dam.



Aerial view shows the scope of the Red Fish Passage Improvement Project.



MAJOR PROGRAMS/ PROJECTS ADVANCE

San Joaquin River Restoration Program

The San Joaquin River Restoration Program is a comprehensive, long-term effort to restore and maintain flows from the main stem of the San Joaquin River below Friant Dam to the confluence of the Merced River in Central California, in order to create naturally reproducing and self-sustaining populations of salmon and other fish in the river while reducing or avoiding adverse water supply impacts from restoration flows.

Federal participation in the program is mandated under the San Joaquin River Restoration Settlement Act, part of the Omnibus Public Land Management Act of 2009.

During 2012

The program completed and released the Final Program Environmental Impact Statement/Report in July recommending a preferred alternative for the program.

In September, Reclamation signed the Record of Decision and the California Department of Water Resources signed the Notice of Determination selecting the preferred alternative from the Final PEIS/R as the course of action for the program.

These documents help provide the foundation for implementing the SJRRP, including actions to achieve long-term flows and reintroduction of salmon to the river; and completion of major channel improvement construction projects and implementation of the water management goal.

Reclamation and the parties to the restoration settlement worked on a revised schedule and budget for the SJRRP, referred to as the Framework for Implementation. Reclamation met with third-party interests to present and discuss the document, which will remain a working draft until other SJRRP-related documents are finalized.

Interim Flow Releases

The third year of interim flows concluded September 30, 2012. During 2012, data collection continued in support of interim flows, including water temperature, groundwater levels, sediment, water quality, dissolved oxygen and biological studies.

Seepage management activities to support interim flows continued, including working with landowners to install projects on their properties to prevent seepage; as well as monitoring of shallow groundwater wells to address seepage concerns and expanding of the groundwater monitoring network on public and private property to better understand changes in shallow groundwater conditions.

Additional Highlights of 2012

The SJRRP allocated more than 680,440 acre-feet and delivered more than 356,200 acre-feet of Recovered Water Account water (an account that tracks the reductions in water deliveries to Central Valley Project, Friant Division, long-term contractors as a direct result of SJRRP flows that have not yet been replaced).

Other developments in 2012:

- Recaptured and recirculated about 68,000 acre-feet of interim flows by November 2012, with that figure expected to increase to 107,000 acre-feet by the end of the water contract year, which runs from March 2012 through February 2013.
- Trapped and transported 114 fall-run Chinook salmon above the Merced River confluence to spawning areas just below Friant Dam as part of the Trap and Transport Study from October through December. Six salmon were artificially spawned and 35 acoustically tagged so they can be tracked individually. Fifty-nine males were transported from the Merced River Hatchery.
- Information continued to be collected on some of the major constraints to fish reintroduction in the river channel and on what actions will need to be implemented prior to and during reintroduction of salmon.

Several other documents were released throughout the year in support of the program:

- 2013 Draft Monitoring Plan and Analysis Plan
- Part III Guidelines for the Application of Criteria for Financial Assistance for Local Projects
- Planned Fall 2012 and Spring 2013 Fall-run and Spring-run Chinook Salmon Activities
- 2012 Mid-Year Technical Report
- Reclamation Central Valley Steelhead Monitoring Plan for the San Joaquin River Recreation Area

- Working Draft Framework for Implementation
- Draft Environmental Assessment and Draft Finding of No Significant Impact for SJRRP Invasive Vegetation Monitoring and Management
- Draft environmental documents for the Arroyo Canal Fish Screen and Sack Dam Fish Passage Improvements Project
- Final environmental documents for the Recirculation of Recaptured Water Year 2012 SJRRP Interim Flows
- SJRRP Funding Information for Fiscal Years 2007 - 2011
- Draft Recirculation of Recaptured Water Year 2012 SJRRP Interim Flows environmental documents

Fiscal Year 2013

During FY 2013, the program expects to:

- Continue monitoring of the shallow groundwater and working with landowners to address potential seepage concerns.
- Release of draft environmental documents for public comment on two high-priority projects that will significantly improve the ability to move water through the river system and sustain fish habitat.
- Continue conducting study activities, including trap and transport of fall-run Chinook salmon, as part of the monitoring and analysis required to address areas where more information is needed in order to make the best decisions for the successful habitat restoration and reintroduction of fish to the river.

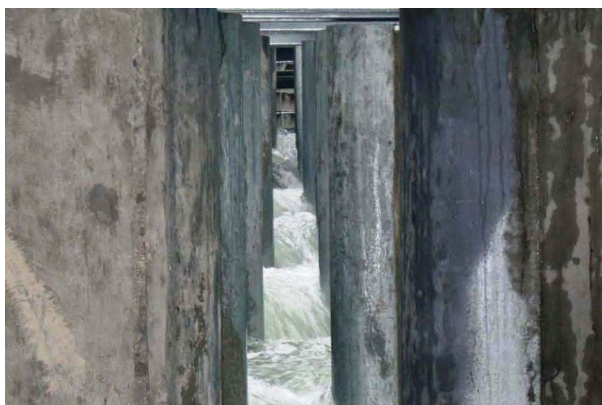
Looking Further Ahead

For the next few years, activities will focus on continuing flow releases and data collection. The program will continue shallow groundwater monitoring and working with landowners to address potential seepage concerns related to interim flows and future restoration flows. The Arroyo Canal Fish Screen and Sack Dam Fish Passage Improvement Project and the Friant-Kern Canal Capacity Restoration Project are anticipated to be the first two projects to be constructed. The start of construction for both projects is scheduled for 2013, followed by two major channel improvement projects that may be started in 2015.

Battle Creek Salmon and Steelhead Restoration Project

During 2012, the Region advanced the Battle Creek Salmon and Steelhead Restoration Project, which is among the largest cold-water anadromous fish restoration projects in North America. The project is an effort to increase threatened and endangered Chinook salmon and Central Valley steelhead trout populations by restoring about 48 miles of habitat — 42 miles in Battle Creek and another six miles in its tributaries, while maintaining renewable energy production at the Battle Creek Hydroelectric Project, owned and operated by the Pacific Gas and Electric Company.

Restoration, begun in 2010 and scheduled for completion in 2015, is being accomplished in three phases, primarily through the removal of five diversion dams, placement of screens and ladders on three other diversion dams, and increasing stream flows, all within Tehama and Shasta counties in Northern California.



A view through the new vertical slot fish ladder at Eagle Canyon Diversion Dam.

The following details progress on the project:

- Phase 1A: With the removal of Wildcat Diversion Dam in 2010, about 15 miles of stream habitat was restored for Chinook salmon and Central Valley steelhead trout. The majority of fish screen and ladder construction has been completed on the North Battle Creek Feeder and Eagle Canyon Diversion Dams, completion of the North Battle Creek Feeder access road (including cut-slope stabilization) is anticipated in calendar year 2013. Implementation of civil, mechanical and electrical design changes are anticipated to begin in Fiscal Year 2014. (Upon full completion in 2015, an additional nine miles of stream habitat will be restored). In 2012, plans and specifications were completed, and a solicitation was posted for the construction of a fish barrier weir and the maintenance

of a 5 cubic feet per second minimum flow in Baldwin Creek near Asbury diversion, downstream of the Darrah Springs State Trout Hatchery. The 5 cfs will allow for suitable salmon and steelhead habitat, while the barrier will prevent these fish, which could carry the IHN virus, from infecting the trout hatchery. This construction is planned to be completed in 2013. Upon completion of Phase 1A, 25 miles of stream habitat will have been restored.

- Phase 1B: Construction of the Inskip Powerhouse discharge outlet and a 5,600-foot bypass to Coleman Canal on the South Fork of Battle Creek (to prevent mixing of north and south fork waters) continued throughout 2012. Phase 1B construction was expected to be completed in January 2013.
- Phase 2: Funding from the state of California for the final phase was received in 2012. The funding will support the installation of a fish screen and ladder on Inskip Diversion Dam, installation of a South Powerhouse discharge outlet connector, and removal of Lower Ripley Creek Feeder, Soap Creek Feeder, and Coleman and South Diversion dams. Phase 2 construction is scheduled to occur from 2014 to 2015. Upon completion of Phase 2, 23 more miles of stream habitat will have been restored.

Via a Memorandum of Understanding, signed in June 1999, Reclamation, the National Marine Fisheries Service, U.S. Fish and Wildlife Service, the California Department of Fish and Game and PG&E initiated work on the project. In addition to the MOU partners, the project has been developed in collaboration with various resource agencies, including the California Wildlife Conservation Board, with participation from the public, stakeholders, and landowners (including the Greater Battle Creek Watershed Working Group and the Battle Creek Watershed Conservancy).

The project is being supported with federal, state and private funding. The American Recovery and Reinvestment Act of 2009, the CALFED Bay-Delta Program, and the Iron Mountain Mine Trustee Council are contributing federal funds; the DFG, the WCB, the California Department of Transportation and the California Department of Water Resources are contributing state funds; and the Packard Foundation (via The Nature Conservancy) is contributing private funds. PG&E is contributing in the form of foregone energy generation, voluntarily pursuing amendments to the Battle Creek Hydroelectric Project's federal energy generation license, and transferring certain water rights to DFG.

Fish Screens and Ladders

Engineers and biologists evaluate operation of fish screen panels at the Eagle Canyon Diversion Dam.



A downstream view of the fish screen at the North Battle Creek Feeder Diversion Dam.

Workers adjust gates on the fish ladder at the North Battle Creek Feeder Diversion Dam.



Bay-Delta Issues

Overview

The San Francisco Bay Estuary and Sacramento-San Joaquin Delta is where two of California's largest rivers meet the saltwater from San Francisco Bay, creating the West Coast's largest estuary. The area is a blend of towns, highways, marinas and farmland. More than 50 island tracts are surrounded by levees and about 700 miles of sloughs and winding channels.

The Delta, the hub of the federal Central Valley Project and California's State Water Project, is among the most important ecosystems in the nation. Water from the Delta serves the federal and state water projects, which in turn, serve urban and agricultural areas in the San Francisco Bay area, the Silicon Valley, the San Joaquin Valley, the central coast and southern California.

The Delta itself sustains billions of dollars in agricultural and recreational activity. It is also the habitat for hundreds of species of plants and wildlife, and more than 50 species of fish, including some that are threatened and endangered.

The Delta has experienced significant ecological collapse as a result of 150 years of human activity, including California's increasing demand for water; changing environmental and climate conditions; and stressors such as pesticides, pollutant discharges and invasive species. Long-term solutions are needed to ensure reliable, quality water supplies and a sustainable ecosystem. Since the 1970s, urban, agricultural and environmental interests have differed over how to balance water diversions with environmental restoration in the Delta. Reclamation and its partners have implemented short-term solutions and are developing long-term plans for Delta sustainability in order to avert further ecological decline while maintaining reliable water supplies.

Region's Bay-Delta Office

The Region's Bay-Delta Office, created in 2010, provides a holistic view of Reclamation's affect and responsibilities on and in the Bay-Delta area and ensures that Reclamation's management of CVP and Delta issues and activities are integrated across the management units of the CVP. The BDO is also the primary point of contact with the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and other federal, state, and local agencies with which Reclamation collaborates on important issues and activities. The office is involved with numerous programs, projects and issues detailed throughout this report.

Ongoing Litigation

Several lawsuits were filed in 2009 challenging Reclamation's acceptance and implementation of both a 2008 FWS Biological Opinion and a 2009 NMFS BO, and associated Reasonable and Prudent Alternatives, for the Coordinated Long-term Operation of the CVP and State Water Project. The U.S. District Court for the Eastern District of California remanded, without "vacature," the FWS BO in December 2010 and the NMFS BO in September 2011. In both cases, the court found that Reclamation had violated the National Environmental Policy Act by failing to conduct National Environmental Protection Act proceedings prior to accepting the BOs and associated RPA actions.

During 2012, the Bay-Delta Office responded to requirements of the court and initiated the NEPA process. Additionally, the BDO is, in coordination with its state and federal partners and other stakeholders, implementing a stakeholder engagement process that will allow broader participation in the Endangered Species Act Section 7 consultation process as well as the NEPA process. The BDO intends to meet the court order requiring NEPA completion of a final Environmental Impact Statement and FWS BO by December 2013 and a final EIS and NMFS BO by 2016.

Because the BOs were remanded without "vacature" by the court, Reclamation's responsibility to implement the BOs and associated RPA actions continues. The BDO continues to work in coordination with the other CVP management units, FWS, NMFS, the state of California and other partners, to meet these requirements.

Bay Delta Conservation Plan

Reclamation continues its participation in the Bay Delta Conservation Plan in concert with the state of California and local authorities.

The BDCP has equal goals of providing conservation of sensitive species and their habitat and assuring a reliable water supply. Reclamation participates in BDCP, along with other federal and state resource agencies, to provide technical information and guidance, which ensures compatibility with CVP requirements and responsibilities. Reclamation is a co-lead agency in the development of the Environmental Impact Report/Environmental Impact Statement for the BDCP.

The BDCP is working to:

- Identify conservation strategies to improve the overall ecological health of the Delta.
- Identify ecologically friendly ways to provide a reliable water supply to cities and farms.



Secretary of the Interior Ken Salazar, with California Gov. Edmund Brown, Jr. looking on, announces proposal for the Delta.

- Address toxic pollutants, invasive species and impairments to water quality.
- Establish a framework and funding to implement the plan over time.

Proposal for Conveyance Facilities Through Delta

During a news conference in July 2012, Secretary of the Interior Ken Salazar and California Gov. Edmund G. Brown Jr. jointly proposed new intake and conveyance facilities through the Delta for public consideration and environmental review.

The BDCP’s preferred proposal is construction of water intake and conveyance tunnels that would have a capacity of 9,000 cubic feet per second. Operations of the facility would be phased in over several years. The conveyance also would be designed to use gravity flow to maximize energy efficiency and minimize environmental impact. Other alternatives, including no conveyance facility, and facilities with capacities ranging from 3,000 to 15,000 cfs, will also be considered as part of the environmental review process.

The secretary and governor said California’s water system is unsustainable environmentally and economically and that the BDCP, including the proposed Delta conveyance facility, is part of a

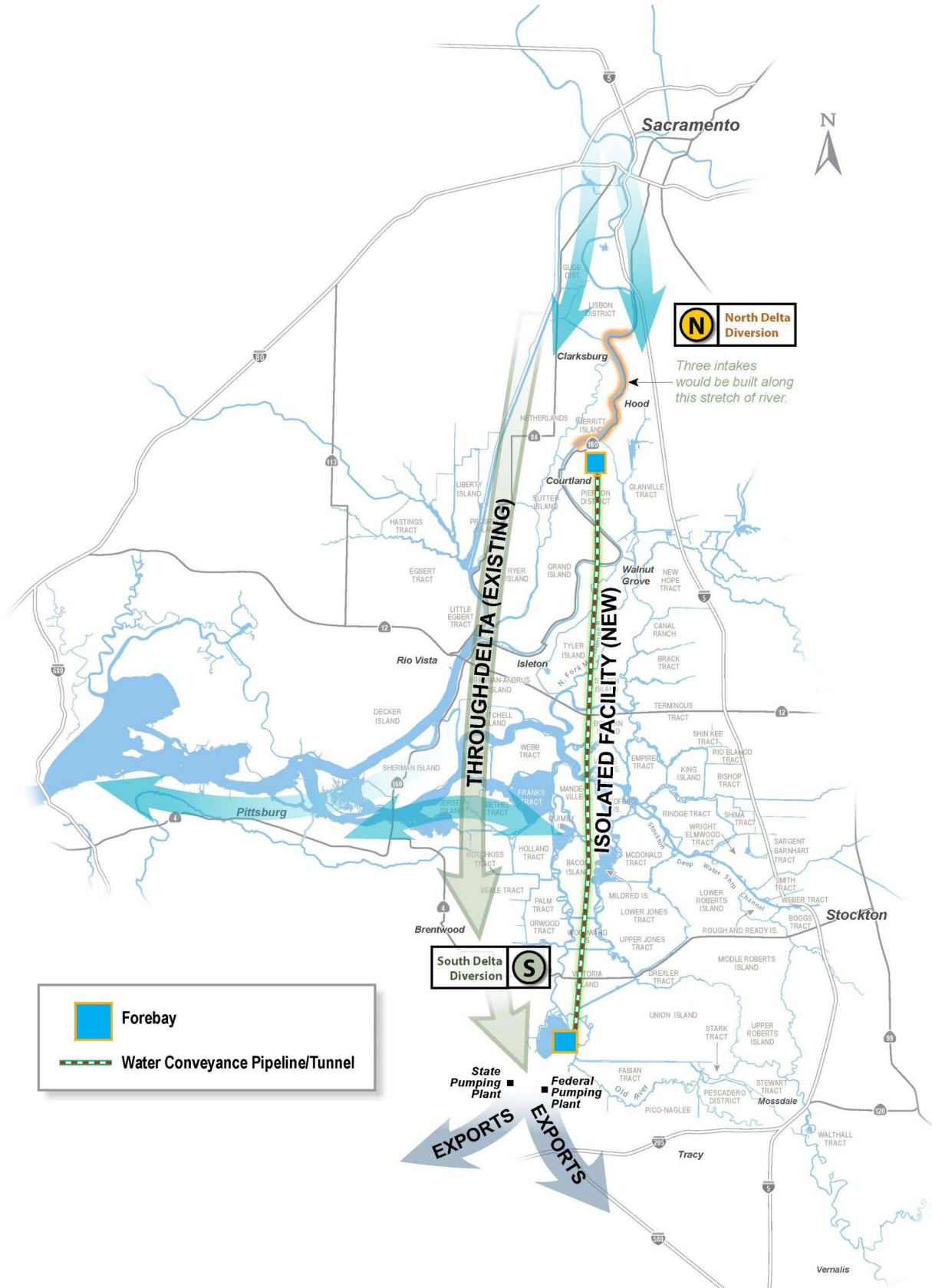
comprehensive solution to achieve a reliable water supply for California and a healthy Bay-Delta ecosystem that supports the state’s economy.

“As broken and outdated as California’s water system is, we are also closer than ever to forging a lasting and sustainable solution that strengthens California’s water security and restores the health of the Delta,” said Salazar.

“Through our joint federal-state partnership, and with science as our guide, we are taking a comprehensive approach to tackling California’s water problems when it comes to increasing efficiency and improving conservation,” he said. “Today marks an important step forward in transforming a shared vision into a practical, effective solution. With California’s water system at constant risk of failure, nobody can afford the dangers or costs of inaction.”

The new approach is intended to help restore fish populations, protect water quality, and improve the reliability of water supplies for all water users who receive deliveries from state and federal projects. It improves on key aspects of previous proposals and offers a governance model, financing options and a scientific review process.

Proposed Delta Conveyance Tunnels



WATER STORAGE/HYDROPOWER

Los Vaqueros Reservoir Expansion

The Los Vaqueros Reservoir Expansion Project near Brentwood in Contra Costa County, California, was dedicated in July 2012, following Regional Director Don Glaser's signature of a Record of Decision for the project the previous year.

The project expanded the existing reservoir's storage from 100,000 acre-feet to 160,000 acre-feet, an increase of 60 percent, by raising the dam 34 feet in height to 521 feet.

The Contra Costa Water District, which owns and operates Los Vaqueros Reservoir, funded and constructed the \$120 million project. Reclamation provided about \$18.3 million in planning and permitting assistance, which was essential to construction of the project.

The expansion:

- Improves water supply reliability.
- Improves the quality of water supplies for Contra Costa Water District's municipal and industrial customers in the San Francisco Bay Area, especially during droughts.

- Protects Sacramento-San Joaquin Delta fisheries through operational flexibility.
- Provides enhanced recreation facilities.

The Region's issuance of a Record of Decision in 2011 was the final step in documenting Reclamation's decision to enter into a coordinated operations agreement with Contra Costa Water District.

After providing technical assistance and funding for the engineering and design of the dam facilities, Reclamation worked with other government agencies to secure permits and establish programs that ensure the protection and preservation of biological, cultural, and water resources that occur throughout the project site.

The reservoir expansion was the first storage project to be implemented under the CALFED Bay-Delta Authorization Act of 2004.

CALFED is a 30-year program that began in 2000 when 18 state and federal agencies signed the CALFED Record of Decision. The program is based on four major resource management objectives that guide actions designed to achieve a healthy ecosystem while supplying 25 million Californians with a reliable water supply. The objectives of CALFED are ecosystem



The Los Vaqueros Dam was raised by 34 feet to a height of 521 feet.

restoration, water supply reliability, water quality and levee system integrity. Reclamation plays a key role as the federal lead agency for implementing water supply reliability actions in coordination with state and local partner agencies.

New Hydroelectric Plant in Klamath Project

A relatively small but symbolic hydroelectric facility began operation on an irrigation canal in the Klamath Project in Oregon in 2012.

The Bureau of Reclamation joined the Klamath Irrigation District in a dedication ceremony in May for the facility that advanced the federal policy of encouraging non-federal development of clean, renewable power resources on federal water projects.

The C-Drop hydroelectric facility uses the force of water dropping 22 feet from the A Canal to the C Canal to generate up to 1.1 megawatts. Funds from power production will help offset electricity costs for the KID and help keep valuable farmland in production. The facility does not change the diversions or timing of irrigation flows and does not impact fish, due to an existing fish screen on A Canal. The hydropower project was supported by a wide range of local stakeholders and interested parties, including farmers, businesses, and local and state governments.

“This is a perfect example of carrying out President Obama’s ‘all of the above’ strategy for developing clean, renewable American energy supplies,” Commissioner Michael Connor said during the dedication ceremony. “At the same time, the project demonstrates how successful partnerships in hydropower development can maintain reliable water supplies and work in harmony with the environment.”

C-Drop Hydro LLC was formed to develop the \$2 million project in conjunction with KID. Reclamation issued a Lease of Power Privilege that authorized work to begin in November 2011. A Lease of Power Privilege is a congressionally authorized alternative to Federal Energy Regulatory Commission hydropower licensing. It gives a non-federal entity authorization to use Reclamation-owned water or facilities for generation and sale of hydropower. Reclamation also has transferred operation and maintenance responsibilities to KID for the existing canals, which carry water south from the Link River Dam to the vicinity of Henley, Oregon.

In keeping with the administration’s pursuit of an all-out renewable energy policy, the Department of the Interior and Reclamation have identified more than 370 existing Reclamation canals and conduits that have the potential of generating more than 1.5 million MWh of additional electricity annually.



Commissioner Michael Connor and Klamath Irrigation District Board Member Ross Fleming at a ribbon-cutting ceremony for the C-Drop hydroelectric facility



Shasta Dam in Northern California is the subject of studies analyzing whether the structure should be raised.

Surface Water Storage Studies

The Bureau of Reclamation released a Draft Feasibility Report and Preliminary Draft Environmental Impact Statement for the Shasta Lake Water Resources Investigation in 2012, examining the potential to enlarge Shasta Dam and Reservoir to achieve multiple water resources benefits.

The Shasta investigation is one of the surface water storage studies included in the 2000 CALFED Bay-Delta Programmatic Record of Decision and is a continuing feasibility study under the authority of Public Law 96-375.

Shasta Dam, on the upper Sacramento River about nine miles northwest of Redding, Calif., is 602 feet high with a current reservoir capacity of 4.5 million acre-feet. Reclamation completed construction of the dam and reservoir in 1944 for flood control, irrigation water supply, municipal and industrial water supply,

hydropower generation, fish and wildlife conservation and navigation purposes.

The draft documents address the potential impacts, costs and benefits of the No Action alternative and five action alternatives evaluated to date. Reclamation and cooperating agencies are analyzing alternative dam raises from 6.5 feet to 18.5 feet and corresponding increases of reservoir storage from 256,000 acre-feet to 634,000 acre-feet.

Reclamation released the documents to share the information generated since completion of the Plan Formulation Report in 2007. A complete Draft EIS will be prepared for formal public review and comment, consistent with the National Environmental Policy Act, as additional scientific information and understanding of the conditions in the Sacramento-San Joaquin Delta is developed and incorporated into the Shasta investigation. A comprehensive public outreach effort will be part of the NEPA process.

RESTORATION PROGRAMS ADVANCE

Central Valley Project Improvement Act

The Central Valley Project Improvement Act of 1992 amended previous authorizations of the Central Valley Project to include fish and wildlife protection, restoration, and mitigation as project purposes having equal priority with irrigation and domestic uses; and fish and wildlife enhancement as a project purpose equal to power generation.

From 1993 through 2012, Reclamation and its partners have completed several large projects, including the Glenn-Colusa Irrigation District fish screen, the Anderson-Cottonwood Irrigation District fish screen, the Shasta Lake Temperature Control Device, the Contra Costa Canal pumping plant and the Coleman National Fish Hatchery. Region implementation of the CVPIA is currently comprised of more than 20 programs and projects that fall into broad categories, including fisheries, wildlife refuges and habitat restoration.

Fisheries

The fisheries goal is to double the natural production of anadromous fish on a sustainable basis.

One of the major projects advancing that goal, the Red Bluff Fish Passage Improvement Project, was completed in 2012. (See pages 22-23.) Two other major, ongoing projects are the San Joaquin River Restoration Program, detailed on pages 24-25, and the Battle Creek Salmon and Steelhead Restoration Project, highlighted on pages 26-27.

Reacting to a robust salmon run during the year in Northern California, the Region released additional water from Trinity Reservoir in August and September to supplement flows in the Lower Klamath River to help protect a large run of adult Chinook salmon. (See separate story on page 39.)

In the Sacramento-San Joaquin Delta, the Region closed the Cross Channel gates near Walnut Grove, Calif., for 10 days in early October 2011 to assist migrating fall-run Chinook salmon. In 2012, the Region

released final environmental documents to repeat the closure during the next four years in order to evaluate the effect on the migrating salmon. (See separate story on page 40.)

In mid-October near Sacramento, the Region joined in a dedication ceremony for the American Basin Fish Screen and Habitat Improvement Project, Phase 1, Sankey Diversion and Canal. A screened diversion for the Natomas Central Mutual Water Co. replaced two existing, unscreened diversions on a canal off the Sacramento River.

Throughout the central and northern portions of California, part of the fisheries program centers on placement of gravel in rivers to restore and build spawning habitat. During 2012, the Region's placed thousands of tons of gravel in the American, Sacramento, Merced, Trinity and Stanislaus rivers. (See separate story on page 37.)

The Region's other accomplishments during FY2012 in the Sacramento River Basin include:

- Removing a road crossing on Antelope Creek in the Tehama Wildlife Area, improving fish passage to more than six miles of spawning and holding habitat.
- Completing the environmental compliance to construct a boulder weir fishway at an agricultural diversion dam on Cow Creek for a project to open 10 miles of historic fish habitat.
- Planting trees on 1.25 acres on Hammon Bar in the Yuba River. The planting area is intended to flood periodically, providing juvenile salmonids with improved rearing habitat.
- Finishing construction of the Bella Vista Fish Screen on the Sacramento River near Redding.

The Region's other accomplishments during FY2012 in the San Joaquin River Basin included:

- Beginning outreach, planning and designs for the Merced River floodplain and channel restoration project at Snelling. The project will

include improvements to benefit operations and maintenance to an existing diversion.

- Advancing construction activities on the Merced River Ranch Floodplain Enhancement Project. Construction included channel contouring and spawning gravel placement to restore the floodplain and channel. The overall project involves restoration of up to six acres of riparian floodplain and more than a mile of spawning habitat.
- Completing two habitat restoration projects on the Stanislaus River: the Lancaster Road Floodplain and Side-channel Restoration Project (640 feet of riparian side channel habitat); and the Honolulu Bar Floodplain Restoration Project (2.47 acres of riparian floodplain, 0.7 acres of new floodplain, 8,100 cubic yards of spawning gravel, and 485 feet of side-channel habitat).
- Beginning construction of the Yuba City Fish Screen on the Feather River.

Wildlife Refuges

The CVPIA goals are to provide certain amounts of two classifications of water to 19 federal, state and private wildlife refuges. The Region was able to achieve the following deliveries through the Refuge Water Conveyance Component of the program during FY2012:

- An estimated 402,454 acre-feet of Level 2 water. The goal is to supply 422,251 acre-feet of Level 2 water to the refuges annually.
- An estimated 55,515 acre-feet of Incremental Level 4 water. The goal is to provide 133,264 acre-feet of Incremental Level 4 water.

The CVPIA requires the Region to acquire water supplies, known as Incremental Level 4, to meet optimal waterfowl habitat management needs at various wildlife areas in the Central Valley. Incremental Level 4 is defined as the difference between historical annual average water deliveries (Level 2) and water

supplies needed to achieve optimal waterfowl habitat management (Level 4).

The amount of water the Region can deliver to wildlife refuges depends on several factors, including the availability of water and ability of Reclamation to deliver water to certain refuges. During 2012, Reclamation funded installation of groundwater wells at refuge locations in order to improve the ability to deliver more reliable water supplies.

Other Resource Programs

Other CVPIA resource programs' goals are to protect and restore terrestrial habitat and the species that depend on them.

In 2012, the Land Retirement Program retired about 300 acres of land from irrigated agricultural production and converted it to native upland habitat at the Atwell Island Land Retirement Demonstration Project site. About 40 acres were removed from irrigation and 260 acres were planted with upland species. Six vernal pool depressions were created, as well.

The Habitat Restoration Program contributed to the protection of 2,333 acres of land through fee title acquisitions of 520 acres of alkali scrub, grassland, and riparian woodland habitats in Fresno County; 1,615 acres of alkali scrub and grassland habitats in Kern and San Luis Obispo counties; and 198 acres of grassland habitat in Tulare County.

In May 2012, Reclamation and other federal, state and private partners celebrated acquisition of 1,603 acres for the Dos Rios Ranch habitat restoration project. Dos Rios Ranch is located at the confluence of the San Joaquin and Tuolumne rivers in Stanislaus County. The Habitat Restoration Program and the Central Valley Project Conservation Program have contributed funds to acquisition of Dos Rios Ranch. (See photos and caption on page 36.)

Dos Rio Ranch



Mid-Pacific Regional Director Don Glaser addresses audience at Dos Rio Ranch ceremony.

Dos Rio Ranch, acquired in 2012 by a partnership that includes Reclamation, has become the largest land conservation project along the San Joaquin River in more than 15 years.

The 1,603-acre former ranch is located on a floodplain at the confluence of the San Joaquin and Tuolumne

rivers in Stanislaus County in Central California. Restoration of the property has the potential to contribute meaningfully to the recovery of wildlife such as the endangered riparian brush rabbit.

Regional Director Don Glaser spoke at a celebration ceremony in May, in part praising partnerships such as the one that is making restoration of the Dos Rios Ranch a reality. The CVPIA Habitat Restoration Program and the CVP Conservation Program contributed funds for Dos Rios Ranch as part of overall San Joaquin River conservation efforts.



A partnership is restoring habitat along the San Joaquin River.

Truckee River Restoration

The Region was recognized in May 2012 by The Nature Conservancy for its contributions to restoration work on the lower Truckee River in the McCarran Ranch Preserve.

The Region provided grant funds through its Desert Terminal Lakes Program for the restoration at McCarran Ranch, which is owned by The Nature Conservancy. The DTL Program has provided grant funding through Reclamation for support of five large scale river restoration projects on the Truckee River including McCarran Ranch. Other contributors include neighboring landowners, state agencies and other federal government agencies.

The 305-acre preserve encompasses more than four miles of the lower Truckee River. The restoration, which began a decade ago, has included construction of a new river bend, creation of riffle sections, removal of non-native vegetation, and planting of native vegetation. Due to the restoration, the populations of fish and wildlife species in the area have increased.



Restoration work is underway on the Truckee River in the McCarran Ranch Reserve.



Gravel Augmentation

During 2012, the Region placed tens of thousands of tons of gravel in northern and central California rivers to meet CVPIA requirements for restoring and replenishing spawning and rearing habitat for fish.

Science-based gravel augmentation programs have proven to be successful in improving habitat for steelhead trout and Chinook salmon. Large rocks and fine sediment in the rivers have reduced the ability for fish to construct redds (nests) and may have reduced the number of eggs surviving and emerging from the redds as juvenile fish.

Gravel was placed in several rivers, including the American, Sacramento, Merced, Mokelumne and Stanislaus.

One of the largest operations occurred on the lower American River in September 2012. The Region, in partnership with other federal, state and local government agencies, placed 14,000 tons of gravel in the lower American River.

The gravel was piled on the north side of the lower American River, downstream of the Sailor Bar Recreation Area in the Sacramento area, and was processed and deposited a mile downstream of the Hazel Avenue Bridge.

Special machinery was used to sort the gravel into small, medium and large sizes. The different sizes were spread in separate areas to test which gravel the fish

prefer for nesting and to examine egg-to-fry survival in the varying areas.

Heavy equipment such as bulldozers pushed as far as midstream to distribute the gravel in the river.

In separate operations, 15,000 tons of gravel was placed at the Sacramento River near Keswick Dam near Sacramento; a total of 10,000 tons in four separate locations in Clear Creek in Northern California; and in Central California, 3,000 tons in the Stanislaus River, 3,580 tons in the lower Mokelumne River, and 8,100 tons in the Stanislaus River.

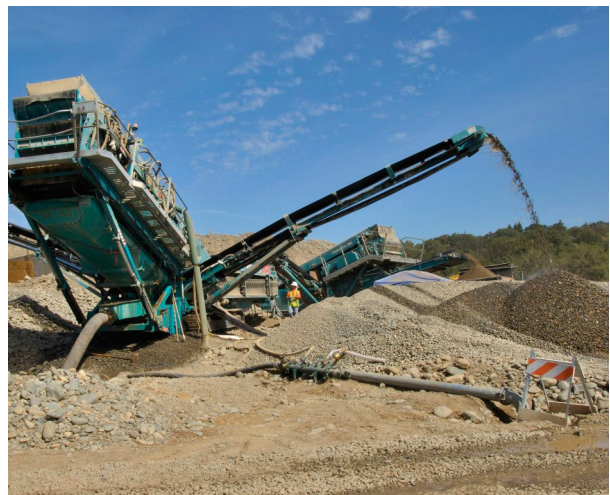


Photo at top of page shows heavy equipment pushing gravel into the American River. Photo above shows machinery that sorts gravel into varying sizes.

Trinity River Restoration

The Region's Trinity River Restoration Program is a long-term, comprehensive effort to restore fish and wildlife populations in and along the Trinity River, below dams that are part of California's Central Valley Project.

The restoration program includes flow management, channel rehabilitation, sediment control and watershed restoration. The results are monitored and assessed to incorporate experience into future restoration efforts through adaptive management.

The program differs from many other restoration programs in that it employs a riverine approach



Trinity River Restoration work includes channel rehabilitation.

intended to create a dynamic river capable of building and maintaining sufficient habitat system-wide.

The program's goals are to complete necessary infrastructure modifications to allow implementation of higher peak releases; to create sufficient suitable habitat through achievement of healthy river attributes; and to predict, measure and evaluate progress toward long-term goals that also influence short-term management actions.

Restoration of the river, below Trinity and Lewiston dams, is an important aspect of meeting requirements of the 1992 Central Valley Project Improvement Act for fish and wildlife protection and mitigation as the CVP meets its water supply responsibilities. Since the signing of the Trinity River Restoration Record of Decision in 2000, the restoration program has finished Phase 1 of the channel rehabilitation component of the ROD. To date, the program has completed 28 of the originally proposed 47 rehabilitation sites within the 40-mile restoration zone.

During 2012, the program completed two channel rehabilitation projects, Upper Junction City and Lower Steiner Flat, which together encompassed four of the 47 sites listed for rehabilitation in the ROD.

At the Upper Junction City site near Weaverville, Calif., Reclamation, and its partners in the program, removed encroaching riparian vegetation and rehabilitated a floodplain. Rehabilitation and construction work involved an in-river island, a side-channel, a large wood-and-boulder habitat, and in- and off-channel habitat ponds. Similar rehabilitation work at Lower Steiner Flat near Douglas City, Calif., was performed by the Yurok Tribe.

In 2012, the TRRP also:

- Initiated new variable restoration flows that benefitted three riparian species: cottonwood, and narrowleaf and red willow dispersal.
- Began scientific review of all Phase 1 rehabilitation projects in order to use the findings for the benefit of future projects.
- Conducted five cooperative watershed projects, keeping 30,000 cubic yards of fine sediment from entering the Trinity River. Fine sediment blankets spawning beds and can smother developing fish eggs.
- Carried out monitoring and assessment of factors such as sediment transport; smolt migration, population, and timing; adult spawning escapement, separated by natural and hatchery, sport and tribal harvest; system-wide habitat assessment; and system-wide bird abundance.

Future of Recreation at Berryessa

The Region held public meetings in December 2012 on the future of recreation services at Lake Berryessa, a reservoir in the greater San Francisco Bay area that provides water and flood control to nearby cities.

Regional Director Don Glaser outlined his decision to terminate a concession contract with a company that was to have led construction of new recreational facilities at the lake.

At the meetings, Glaser discussed plans for services during the 2013 season, over the next five years, and in the long-term. The regional director introduced plans to create a forum to provide for public involvement regarding recreation and land use activities at the lake and to promote effective communication, consideration of interests and the resolution of problems.

In mid-December 2012, the regional director was reassigned to a new position -- special assistant to the commissioner of Reclamation -- in the agency's office in Denver, Colo., but continues to oversee development and implementation of recreation management efforts and the community forum at Lake Berryessa.

Lake Berryessa is managed by Reclamation as part of the Solano Project.

Pleasure Cove Marina, operated by Forever Resorts, continues to offer recreation opportunities for the visiting public, and John C. Frazier III continues to operate the Markley Cove concession area under an interim contract. Reclamation manages several recreation facilities at the lake, including the visitor center and water education center, a boat launch ramp at Capell Cove, a hand-launch ramp at Eticuera Day Use Area, and picnicking, fishing and swimming at Oak Shores and Smittle Creek Day-Use Areas.

Supplemental Flows in Lower Klamath River Protect Salmon

The Region released supplemental flows from Trinity Reservoir into the lower Klamath River in August and September 2012 to help protect a substantial run of adult Chinook salmon.

Fish biologists had estimated that there would be one of the best runs of salmon in recent times. Biologists were concerned about the large size of the run, combined with dry conditions in the upper Klamath Basin and

expected low flows in the Klamath River during late summer. Warmer water temperatures cause fish to be more vulnerable to disease.

Reclamation augmented flows from mid-August to the third week in September, a period that encompassed most of the fall Chinook run. The action has been credited with contributing to a successful run, with diseases less prevalent than in previous years.

The fish runs of 2012 created a challenge for the TRRP because increased flows in later summer raised river levels in the Trinity River during the time when in-channel restoration activities are permitted to take place. But workers were able to complete in-channel work despite higher flows.



The size of Chinook salmon runs are increasing in the Klamath River.

Natomas Fish Screen



The American Basin Fish Screen and Habitat Improvement Project, Phase 1, Sankey Diversion and Canal, was completed in 2012. The project provides a screened diversion for the Natomas Central Mutual Water Co. near Sacramento, replacing two existing, unscreened diversions on a canal off the Sacramento River. The Region and its partners joined in an October dedication ceremony. Half of the \$36 million project was completed with federal funds. The project advances the CVPIA's Anadromous Fish Screen Program to develop and implement measures to avoid losses of juvenile fish resulting from unscreened or inadequately screened diversions on the Sacramento and San Joaquin rivers, their tributaries and the Sacramento-San Joaquin Delta.

Truckee River Operating Agreement

In 2012, the California State Water Resources Control Board approved petitions for water rights changes and water appropriation applications for implementation of the Truckee River Operating Agreement.

TROA would modify the operations of Truckee River reservoirs upstream of Reno, Nev., and enhance the flexibility and coordination of those operations while meeting flood control and dam safety requirements. With the implementation of TROA, interstate water allocations would also take effect between California and Nevada in the Lake Tahoe, Truckee River, and Carson River basins.

TROA parties have existing water rights permits and licenses in Independence Lake, Boca, Prosser and Stampede reservoirs. In October 2012, the petitions and applications the state board approved included:

- Addition of common points of diversion among existing water rights in Independence Lake and Stampede and Boca reservoirs.
- Redistribution of storage among those three reservoirs.
- Addition of common points of distribution.
- Expansion and combination of the area for the beneficial use of the water rights.
- Conditions that the water rights changes and appropriations would not become operative until TROA is approved by the Federal Orr Ditch Court.

TROA was signed by the Secretary of the Interior and many other parties in September 2008. Several contingencies are required to be met before TROA can be implemented. Remaining contingencies include modification to the Orr Ditch Decree and resolution of litigation concerning the Environmental Impact Statement, Record of Decision, and Federal Rule. The Orr Ditch Decree (1944) adjudicated all water rights in the Truckee River establishing individual water rights, amounts, place of use, and priority. The Orr Ditch Court is the federal court having jurisdiction over the Orr Ditch Decree.



The Region is working with partners to implement an agreement regarding the Truckee River.

WATERSMART AND OTHER PROGRAMS

Overview

Water is our most precious natural resource and is increasingly stressed by the demands our society places on it. Adequate water supplies are an essential element in human survival, ecosystem health, energy production and economic sustainability. Significant climate change-related impacts on water supplies are well documented in scientific literature and scientists are forecasting changes in hydrologic cycles.

Congress recognized these issues with the passage of the SECURE Water Act, a law that authorizes federal water and science agencies to work together with state and local water managers to plan for climate change and the other threats to our water supplies, and take action to secure our water resources for the communities, economies, and the ecosystems they support.

To implement the SECURE Water Act, and ensure that the Department of the Interior is positioned to meet these challenges, Secretary of the Interior Ken Salazar established the WaterSMART (Sustain and Manage America's Resources for Tomorrow) program in 2010.

WaterSMART allows all bureaus of the department to work with states, tribes, local governments, water agencies and non-governmental organizations to pursue a sustainable water supply for the nation by establishing a framework to provide federal assistance on the efficient use of water, integrating water and energy policies to support the sustainable use of all natural resources, and coordinating the water conservation activities of the various department offices.

Reclamation plays a key role in the WaterSMART program as the department's main water management agency. Focused on improving water conservation and helping water and resource managers make wise decisions about water use, Reclamation's portion of the WaterSMART program is achieved through administration of grants, scientific studies, technical assistance and scientific expertise.

WaterSMART provides funding, combined with grant recipient cost-share funds, that supports the following types of grants awarded by the Region in 2012: Water and Energy Efficiency Grants, Cooperative Watershed

Management Program Grants, and Title XVI Program Water Reclamation and Reuse Projects. (Title XVI is also known as the Reclamation Wastewater and Groundwater Study and Facilities Act of 1992.)

Grant Awards

In FY 2012, the Region awarded 10 water conservation and efficiency grants through WaterSMART and other programs that totaled \$6.5 million. Including local cost-share contributions, more than \$20.5 million in water management improvement projects will be implemented in the next 24 months. The projects will result in conservation or better management of an estimated 292,000 acre-feet annually. The awards include four CALFED Water Use Efficiency Grants, five WaterSMART Water and Energy Efficiency Grants, and one Cooperative Watershed Management Program Grant.

Grant recipients were diverse, ranging from large water agencies to nonprofit entities, to agricultural districts, to non-federal contractors. Geographically, recipients spanned the Region. Examples of projects awarded grants in 2012 include: groundwater basin recharge projects, a residential water meter installation, a residential irrigation retrofit program, canal lining, canal automation and irrigation efficiency improvements on farms.

The Region also administratively completed and closed-out grants for 11 projects that are allowing conservation or better management of a combined 153,000 acre-feet water per year.

The following are examples of these completed projects:

- The United Water Conservation District in Santa Paula, Calif., received a \$76,698 WaterSMART Water and Energy Efficiency grant for the Saticoy Moss Screen Pipeline Delivery Gate Automation Project. The project involved automation and modernization of the UWCD's Moss Screen facility. Automating the gates at the facility resulted in several benefits including improved employee safety and ease of operation, increased delivery flexibility, and water level

control. UWCD estimates that the project will conserve about 3,700 acre-feet per year.

- South San Joaquin Irrigation District in Manteca, Calif., received a \$995,000 WaterSMART Bay-Delta Agricultural Water Conservation and Efficiency Project Grant. With this funding, SSJID built a state-of-the-art, pressurized irrigation system to irrigate about 3,800 acres. The project incorporated automated water delivery controls and updated metering technology, allowing for precise measurement and accounting of water use. The project resulted in energy conservation, reduced air emissions and improved water quality, and is estimated to conserve about 3,498 acre-feet of water per year. In addition to the district level pressurized pipe, fields that were flood-irrigated were converted to sprinkler or micro-drip irrigation systems that resulted in significantly less on-farm water use and higher yields.

Water Management Plans

The Central Valley Project Improvement Act requires certain contractors to prepare water management plans according to specific criteria and best management practices. In 2012, the Region reviewed and approved six 5-year water conservation plans. In addition, the Region is working closely with the California Department of Water Resources and Reclamation contractors to ensure contractor compliance with new state water conservation mandates and planning requirements.

Water Reuse

Under the WaterSMART program, the Region both awarded new Title XVI Program agreements and modified existing agreements, providing a total of more than \$10.6 million. In 2012, the Region entered into four new financial assistance agreements to provide \$343,000 in federal cost-sharing funds for the planning of projects to reclaim and reuse wastewater, and/or naturally impaired ground and surface waters. The local sponsors will provide at least 50 percent of the funding.

The Region also modified three existing agreements to provide about \$10.3 million for the construction of three reuse/reclamation projects. The sponsors will provide at least 75 percent of construction costs.

The Region's 2012 projects include locations in the California counties of, Marin, Monterey, Napa, Sacramento, Santa Clara and Sonoma. The agreements were authorized under Title XVI. Projects



Workers install pipeline as part of the North Bay Water Reuse Program.

are constructed and owned by non-federal sponsors, uniting local communities with the federal government to provide change, growth, and a future for clean water and environmental stewardship in a broad range of areas.

Primary goals are improved water-use efficiency, creation of additional water supplies, increased drought resistance of existing supplies and a reduction in the reliance on inter-basin water transfers. The reclaimed water may be used for a variety of purposes, including environmental restoration; fish and wildlife uses; groundwater recharge; and certain municipal, domestic, industrial, agricultural and power generation uses.

Reclamation's role includes coordinating with non-federal project sponsors, providing advice on preparation of necessary reports and reviewing the reports and submittals to determine whether the project meets the criteria of the Title XVI Program.

The following are examples of the feasibility studies:

- The Monterey Regional Water Pollution Control Agency is investigating the feasibility for the development of a Groundwater Replenishment Project that would produce 6,000 acre-feet per year of potable water from the reclamation and reuse of their municipal wastewater and recycling of return agricultural flows from Monterey County. A new Advanced Water Treatment Plant would recycle municipal wastewater and dilution/make-up water streams sufficient for indirect potable reuse.

- The Sacramento Regional County Sanitation District will evaluate the feasibility of replacing up to 97,000 acre-feet per year of surface and groundwater supplies with recycled water to irrigate up to 27,000 acres of permanent agriculture, habitat mitigation, and conservation lands in south Sacramento County.



A vertical turbine pump is installed at a water reuse project near Novato, Calif.

The following are examples of the construction projects:

- The Sonoma County Water Agency, as lead agency of the North Bay Water Reuse Authority, in Sonoma, Calif., received a WaterSMART grant of about \$3.8 million to continue design and construction of the North Bay Water Reuse Program. In 2012, NBWRA member agencies installed about 3.4 miles of recycled water distribution pipeline and upgraded a wastewater treatment plant's capability from secondary to tertiary treatment (the upgraded treatment plant went online in September 2012). Additional work included conducting a financial analysis for additional distribution pipeline in a groundwater deficient area and acquiring easements necessary for a recycled water distribution pipeline to supply recycled water to bittern ponds as part of a restoration effort. Design and construction activities will continue throughout 2013.

- San Jose, Calif., received a WaterSMART grant of about \$2.4 million to continue design and construction of the South Bay Water Recycling Program, a joint effort between the city, the Santa Clara Valley Water District, and other local water agencies.
- Watsonville, Calif., was awarded \$4,000,000 for its joint project with the Pajaro Valley Water Management Agency's Watsonville Area Water Recycling Project. The project reduces over-drafting of groundwater resources and subsequent seawater intrusion. It recycles 4,000 acre-feet per year of effluent from the city's wastewater treatment plant and blends it with higher quality water to reduce salinity. The Title XVI project is comprised of expanded facilities at the city's wastewater treatment plant, a blending facility, and a distribution system for transporting the blended recycled water to agricultural users.



Crews put finishing touches on pipe installation at a water reuse project near Novato, Calif.

CLIMATE CHANGE

Overview

Secretary of the Interior Ken Salazar released a report that assesses climate changes during the 21st century and how these might impact water operations, hydropower, flood control, and fish and wildlife in the western United States. The report to Congress, prepared by the Bureau of Reclamation, represents the first consistent and coordinated assessment of risks to future water supplies across Reclamation river basins, including those in the Mid-Pacific Region.

(For actions underway in the Region in reaction to this report, please see the next page: Climate Change Activities in 2012.)

Reclamation's SECURE Water Act Report, released in 2011, identified the following likely climate changes, on average annually, in the Region:

Sacramento and San Joaquin River Basins

- Mean annual temperatures are projected to steadily increase by up to 5 degrees to 6 degrees Fahrenheit by the end of the 21st century throughout California's Central Valley. These projections suggest that mean annual precipitation in the Sacramento and San Joaquin River basins will slightly increase by about 1 percent over the Sacramento River Basin and decrease by about 4 percent over the San Joaquin River Basin by 2050. By the end of the 21st century, the projections indicate a precipitation decline of about 3 percent to 5 percent in the northern and about 8 percent to 10 percent in the southern portions of the Central Valley.
- Runoff is projected to increase slightly during the first half of the 21st century and decline slightly in the latter half of the century.
- As the climate warms, more precipitation falling as rain instead of snow at lower elevations will increase winter runoff and decrease summer runoff. The increase in temperature also will result in significantly decreased snowpack at higher elevations.



Sacramento and San Joaquin River Basin

Klamath River Basin

- Mean annual temperatures in the Klamath River Basin in southern Oregon and northern California is projected to increase by about 5 degrees to 6 degrees Fahrenheit during the 21st century, with a projected increase of about 2 percent in precipitation by 2050 and a slight decline of about 1 percent by the end of the century.
- Runoff is projected to increase anywhere from 3 percent to 10 percent by 2050 and by the end of the century, range from a 1 percent decrease to about a 4 percent increase.
- Increased warming is expected to reduce snowpack and snowmelt, resulting in less runoff during the late spring through early autumn. Snowpack decreases are projected to be more substantial in the warmer parts of the basin.



Klamath River Basin

Climate Change Activities in 2012

The following actions are underway in the Mid Pacific Region:

- During Fiscal Year 2012, three basin studies were underway to address climate impact assessments and develop adaptation strategies for each of the major Mid-Pacific Region river basins identified in the Secure Water Act of 2009.
- The West-wide Climate Risk Assessment is continuing to establish a better foundation for developing more in-depth analyses of climate impacts and adaptation strategy options for the basin studies, operations planning and other activities. In FY 2012, new information and improved methods to evaluate the climate change impacts on agricultural water demands during the 21st century have been developed for use in the Sacramento-San Joaquin Basins Study.
- The Region is also conducting other planning studies that include assessments of the effects of climate changes. These include the Bay Delta Conservation Plan, CALFED Bay-Delta Program, storage program investigations, and the Central Valley Project Integrated Resource Plan.

Truckee River Basin

- Mean annual temperatures in the Truckee River Basin in the Sierra Nevada range of California and Nevada are projected to increase by about 3 degrees to 5 degrees Fahrenheit during the 21st century, with a decrease in precipitation of about 1 percent by 2050 and 3 percent to 5 percent by the end of the century.
- Runoff is projected to decrease by about 3 percent to 5 percent by 2050 and 3 percent to 6 percent by the end of the century.
- Warmer conditions will likely turn snow into rain, increasing December–March runoff and significantly decreasing April–July runoff.



Truckee River Basin

SAFETY: THE REGION'S TOP PRIORITY

Commissioner's Safety and Occupational Health Award

The Region received the Commissioner's 2012 Safety and Occupational Health Award for reducing illnesses and injuries and for improving its safety and occupational health program.

Through efforts of the Division of Safety, Health and Security, the Region achieved the second lowest "Recordable Injury Rate" and the lowest "Days Away, Restricted, or Transferred" rate among all five regions and the combined Denver and Washington offices.



Reclamation Commissioner Michael Connor, left, presents Reclamation's 2012 safety award to Regional Director Don Glaser at the Reclamation Leadership Team meeting in Denver, Colo., in October 2012.

The Region also had the largest reductions from its five-year average in both rates, with a 36.7 percent decrease in the RIR rate and a 43.3 percent reduction in its DART rate. Other justifications for the award included actions taken by the division, including:

- Conducting 10 training sessions covering Reclamation safety and health standards.
- Holding workshops to bring together safety and health personnel, managers and regional employees to learn about and discuss a wide range of professional development topics.
- Developing a focused approach to investigating DART accidents, which provided additional support to supervisors.
- Developing procedures to better identify the cause of accidents and preventive measures.

Mormon Island Auxiliary Dam

The ongoing Joint Federal Project is the cornerstone for more than \$1 billion in dam safety and flood damage reduction improvements to further protect more than a million residents in communities downstream from Folsom Dam complex, which is on the American River, about 25 miles northeast of Sacramento, Calif.

In September 2012, the Region completed a portion of that work, which involved the Mormon Island Auxiliary Dam. The \$35.5 million project strengthened the foundation of the dam by constructing a concrete block that is 900 feet long, 55 feet wide and 40 feet in height. The structure is anchored eight feet into bedrock and further strengthened by pilings, braces and backfill.

The project involved excavating 120,000 cubic yards of sediment and rock, processing 60,000 cubic yards of concrete aggregate, onsite batching of 60,000 cubic yards of concrete, and placement of 60,000 cubic yards of compacted select backfill.

Dam Safety Exercises

The Region continued its program of conducting dam safety exercises to enhance disaster preparedness and emergency response planning and execution.

A full-scale emergency exercise was conducted in Trinity County in Northern California, along with tabletop exercises for Folsom, Nimbus, Whiskeytown and Terminal dams; and complex functional exercises for San Justo, Rye Patch and Lahontan dams.



Emergency workers load “disaster victim” aboard a California Highway Patrol helicopter.

Emergency worker tends to a “disaster victim.”



Emergency vehicles were part of the exercise.

The full-scale exercise in May 2012 simulated an earthquake that causes Trinity Dam to fail. The resulting flood along the Trinity River causes a simulated structural failure at a local school.

School staff and students acted out various types of injuries. The goal of the exercise, held in cooperation with local and state emergency agencies, was to

coordinate and implement triage and transport of the ‘injured’ students before the leading edge of floodwaters arrived.

Ambulances, a California Highway Patrol helicopter, and local transit buses were used to evacuate the “wounded” to a local airport, where a mobile care site was set up by county public health professionals.

AMERICA'S GREAT OUTDOORS ACTIVITIES

Throughout 2012, the Region organized new events and continued existing programs that support a federal initiative to better connect the public to the outdoors.

President Obama launched the America Great Outdoors initiative in 2010, calling on the Secretary of the Interior and other federal officials to develop a 21st century conservation agenda that will protect America's natural and cultural resources, and connect people to the outdoors through jobs, education, recreation and service.

The companion to AGO was the First Lady's Let Move Outside! Initiative, dedicated to solving the challenge of childhood obesity within a generation so that children born today will grow up healthier and able to pursue their dreams.

In 2012, the Region participated for a second year in a major exhibit on AGO/LMO at the California State Fair in Sacramento. The popular exhibit featured activities for all ages and highlighted various aspects of the AGO initiative and the roles of the Department of the Interior agencies. The exhibit was a cooperative effort between agencies within the department and state agencies.

The exhibit showcased California's wildlife; landscapes; and rivers, lakes and reservoirs. It informed visitors about the myriad ways they can enjoy the outdoors, from bird watching and white-water rafting, to canoeing and driving dune buggies. Activities to engage youth included making water-related bracelets, painting bird masks, playing a bird identification game called "Bird Bingo," and posting promises to help preserve America's outdoors.

As part of AGO's agenda of connecting people to the outdoors through jobs, the Klamath Basin Area Office, located in southern Oregon and Northern California, worked with the Klamath Tribes to again employ high school students during the summer. The interns receive training from biologists across the spectrum of activities performed by members of the Area Office's Fisheries Division.

The Region also supports the AGO initiative through a wide range of interpretive, educational and recreational activities at facilities such as the American River





Kayakers participate in a recreational program at Lake Berryessa near the San Francisco Bay area.

Water Education Center near Folsom Lake, and at New Melones, Berryessa and Shasta lakes.

Examples in 2012 included:

- Trips to explore the top of Table Mountain, which is a lava flow near New Melones Lake in Central California. Reclamation rangers led children on a hike where they identified wildflowers and viewed the many aquatic creatures in vernal pools.
- Reclamation rangers offered guided kayaking tours on Lake Berryessa, located in the greater San Francisco Bay area. Along the way, kayakers learned about the natural and human history of the lake, as well as had the opportunity to view creatures such as bald eagles, ospreys and deer.
- The Region again participated in the city of Shasta Lakes' celebration of the construction of Shasta Dam in Northern California. As part of the event, the Northern California Area Office, hosted the Dam Workers Reunion, which brought together the men and women who helped build the dam.

The Region also conducted a wide range of events in which public volunteers assisted with environmental restoration and rehabilitation.

Examples in 2012 included:

- Volunteers participating in a debris cleanup day along the shores of Lake Berryessa. Afterward, the volunteers were treated to a lunch.
- Boy Scouts helped maintain oak seedlings planted throughout a campground at New Melones Lake. The scouts placed cages around the trees and flagged them for protection.

Among the most popular and best known of the events at many of the reservoirs is the Catch a Special Thrill (C.A.S.T.) for Kids Fishing events. Children with disabilities or disadvantages have an opportunity to go fishing out on a boat, many for the first time. The events are supported by Reclamation in a broad partnership with other agencies and community groups.



C.A.S.T. For Kids

Fishing enthusiasts team up with disabled and disadvantaged kids for fishing at Shasta Lake, under the program "Catch A Special Thrill" for Kids fishing.

Volunteer Events

Volunteers for the annual cleanup day at Lake Berryessa pose behind the pile of trash they collected.



California State Fair Exhibits

Reclamation park rangers help children attending the fair better understand the environment.

Summer Youth Employment

Fish biologist James Ross, left, and Mickey Hicks work in the field. The Region hired Hicks as a summer intern through the Klamath Tribes Summer Youth Employment Program.



Assistant Secretary's Visit

Anne Castle, assistant secretary for water and science, toured much of the Region. She is shown here with children on a river's edge with a view of Red Bluff Fish Passage project construction on the other side of the river.

Exploration Tours

Reclamation rangers lead school students on a trip to explore Table Mountain near New Melones Lake.



OTHER ACCOMPLISHMENTS

Auburn-Folsom-Natoma Recreation Agreement

The Region and the California Department of Parks and Recreation signed an agreement in February 2012 for the state to continue managing recreational activities on large tracts of Reclamation land in Central California. The Folsom and Auburn state recreation areas include Folsom Lake, Lake Natoma and the Auburn Project Lands.

The agreement serves as the basis for the state to continue to provide recreation, visitor services, law enforcement and maintenance on these federal lands for the next 25 years. Together, the recreation areas comprise 53,000 acres of land and waterways.

During a ceremony in Auburn, representatives of about 30 groups and organizations that helped Reclamation and the state reach the agreement signed a ceremonial certificate of achievement.

Regional Director Glaser, addressing the audience, said that “the surrounding communities in Placer, El Dorado and Sacramento Counties will realize a direct economic benefit as the public continues to visit the Folsom and Auburn State Recreation Areas and enjoy all that they have to offer.”



Regional Director Don Glaser speaks at the Recreation Agreement signing ceremony.

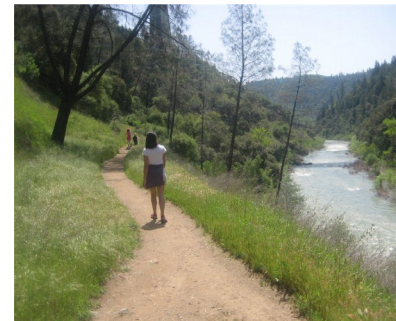
Lower Klamath National Wildlife Refuge

Dry conditions in the Upper Klamath Basin in 2012 resulted in limited water supplies that made it difficult for the Region to address the many varying water needs in the Klamath Basin. Even so, the Region was able to provide substantial water supplies to the Lower Klamath National Wildlife Refuge, the nation’s first large marshland preserved for waterfowl habitat.

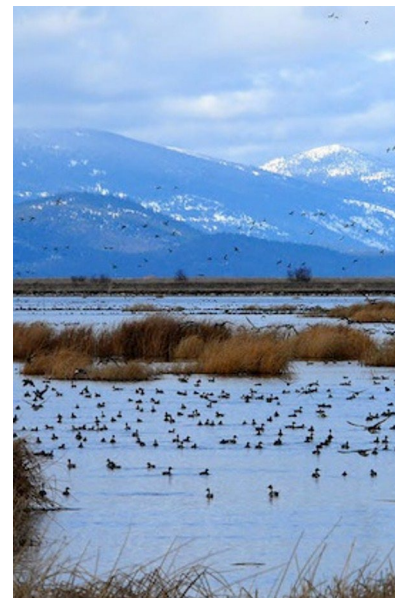
Reclamation initially provided more than 35,000 acre-feet of water to the Lower Klamath National Wildlife Refuge for the flooding of about 18,000 acres of refuge wetlands. In September and October, Reclamation was able to provide another 20,000 acre-feet of water for the refuge, located in northeastern California and southern Oregon.

Reclamation works closely with the U.S. Fish and Wildlife Service to identify opportunities to provide additional water to the refuge to further assist in the flooding and sustaining of essential, seasonal and permanent marshes. At the same time, Reclamation is charged with balancing scarce water supplies among fisheries, wildlife refuges, Tribes, and irrigators.

Reclamation has made significant lease contract changes over the last decade to improve agricultural compatibility with wildlife on refuges such as the flood-fallowing of lease lots to create wetlands and providing incentives for organic crop production.



A hiker at the Auburn Recreation area.



Lower Klamath National Wildlife Refuge.

EMPLOYEE PHOTO CONTEST

PEOPLE'S CHOICE BEST OF SHOW/FACILITIES



"Moonbow at Friant Dam;" photograph by John Bohrman.

LANDSCAPE



"A Sunset Across Galaxy Lake Natoma;" photograph by John Bohrman.

PEOPLE



"Two Thumbs Up and Ready to Go;" photograph by Darin Taylor.

FLORA



"Springtime at Shasta Dam;" photograph by Sheri Harral.

HONORABLE MENTION



"Folsom in the Mist;" photograph by Jesse Castro.

HONORABLE MENTION



"Spider and Dew;" photograph by Victoria Bevolden.

WILDLIFE



"Camp Nine Eagle;" photograph by Pat Sanders.

HONORABLE MENTION



"Equestrian Event;" photograph by Alicia Palmer.

HONORABLE MENTION



"Friant Flowers;" photograph by John Bohrman.

HONORABLE MENTION



"Historic North Canal Redwood Flume (Klamath Project);" photograph by Jennifer L. Birri.

WEB RESOURCES

- Department of the Interior
<http://www.doi.gov>
- Bureau of Reclamation
<http://www.usbr.gov>
- MP Region
<http://www.usbr.gov/mp>

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On the front cover: Large background photo shows New Melones Lake and Dam in the San Joaquin Valley. The 2012 employee contest picture was taken by Pat Sanders. **On the back cover:** Workers harvest produce at a farm in California's Central Valley (photo courtesy of the California Department of Water Resources).