

AGENDA
KANSAS – OKLAHOMA ARKANSAS RIVER COMMISSION

Forty-Eighth Annual Meeting
9:30 a.m. July 25, 2012

The Historic Elgin Hotel
115 North 3rd Street, Marion, KS

- 1 .Call to Order, Chairman**
- 2. Chairman’s Remarks – Introductions and Announcements**
- 3. Presentation of Credentials – New Appointments to the Commission**
- 4. Reading and Amendments to / Approval of the Minutes of the 47th Annual Meeting**
- 5. Report of the Federal Chairman**
- 6. Reports of the State Commissioners Oklahoma / Kansas**
- 7. Report of the Secretary**
- 8. Report of the Treasurer**
- 9. Engineering Committee Report**
- 10. Legal Committee Report**
- 11. Finance Committee Report**
- 12. Reports of State and Federal Agencies and Others**
- 13. Resolution pertaining to Harold Springer**
- 14. New Business Designation of Committee Members / Next Meeting / Others**
- 15. Adjournment**

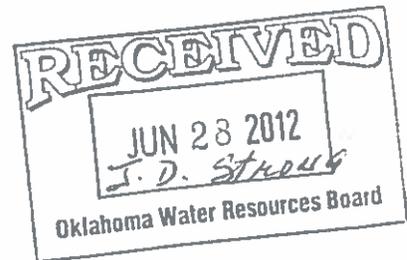
KS-OK 2012 Marion, KS

Name	Representing	Phone	address	e-mail
Bruce Falk	Kansas	620 546 5228	33 NE 75th Ave Stafford KS 67578	bs-falk@ sbcglobal.net
Peggy Blackman	Kansas	620 382 0541		65blackman@sbcglobal.net
Julie Cunningham	Oklahoma	405 530-8800		jmcunningham@ourb. ok.gov
Chris Beightel	Kansas	785.216.3830		chris.beightel@okla.ksgov
DEAN Couch	OKla	(405) 530-8800		dcouch@ourb.ok.gov
J. Ross Kirtley	OK	405-429-5506		rkirtley@sandrighsenaff.com
Bryce Benson	OK	580-327-2000	518 2nd Alva	bryce_benson@afbisinc.com
Ernie Silder	USA	918-682-1119	10 OAK PARK LN MUSKOGEE, OK	esilder@interstate properties.com
BOB LITTLE - AS ON FILE				
Chuck Shively	USA Kansas	620-252-6007		PO Box 1629 Coffeyville, KS 67337 cshively@coffeyville.com
JOHN GAGE	U.S.B.R.	405-470-4815		jjgage@USBR.GOV
TOM KNEIL	ARKANSAS RIVER COMMISSION	316-744-1016	1110 EDINBURG BELLAIRE KS 67220	thomas.kneil@wichita.edu



Kansas-Oklahoma Arkansas River Commission

109 SW 9th Street, 2nd Floor
Topeka, KS 66612



MEMORANDUM:

June 25, 2012

To: Mr. President, Governors, Members and interested parties of the Kansas-Oklahoma Arkansas River Compact Commission
From: Bob Lytle, Compact Secretary / Treasurer
Subject: Forty Eighth Annual Meeting

The Forty Eighth annual meeting of the Kansas–Oklahoma Arkansas River Compact Commission will be held on Wednesday July 25, 2012 at 9:30 am at the Historic Elgin Hotel in Marion, Kansas, 115 N. 3rd Street.

Lodging has been arranged at the Historic Elgin Hotel for the night of Tuesday July 24, with a room rate of \$80.00. A catered dinner is planned for 5:30 pm the eve of the 24th, followed by a tour of the Marion Lake Watershed and Reservoir. The morning of the meeting there will be a breakfast available.

Please contact Mrs. Peggy Blackman, Kansas Commissioner to the Compact Commission, at 620-382-2541 to confirm your need for lodging and your participation in dinner, the tour and breakfast. Peggy would appreciate any suggestions concerning bar selections with dinner. To assist Mrs. Blackman with making final arrangements, please contact her no later than JULY 13, 2012.

Please mark your calendars and make your reservations. If you have any questions please feel free to contact me at 785-296-6086 or Peggy at the number listed above. A meeting agenda has been included.

THE WHITE HOUSE
WASHINGTON

February 24, 2012

Mr. Albert Earnest Gilder
Post Office Box 2519
Muskogee, Oklahoma 74402

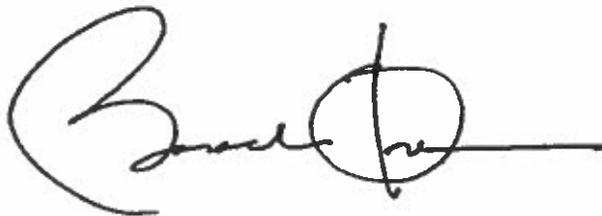
Dear Mr. Gilder:

Pursuant to Public Law 89-789, approved November 7, 1966, the Congress granted consent to the Arkansas River Compact between the States of Kansas and Oklahoma. This law further established the Kansas-Oklahoma Arkansas River Commission.

I am pleased to designate you as United States Commissioner on the Kansas-Oklahoma Arkansas River Commission. By this designation you will serve as ex-officio chairman of the commission, without vote, as provided by Article X of the Compact.

I sincerely appreciate your willingness to serve in this capacity and look forward to reports on your work via the Office of Management and Budget.

Sincerely,

A handwritten signature in black ink, appearing to be "Barack Obama", written in a cursive style. The signature is positioned below the word "Sincerely,".

THE WHITE HOUSE
WASHINGTON

February 24, 2012

Mr. Charles P. Shively
608 West Eighth Street
Coffeyville, Kansas 67337

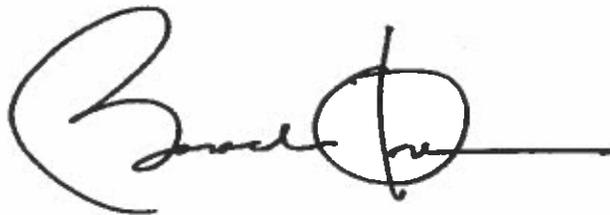
Dear Mr. Shively:

Pursuant to Public Law 89-789, approved November 7, 1966, the Congress granted consent to the Arkansas River Compact between the States of Kansas and Oklahoma. This law further established the Kansas-Oklahoma Arkansas River Commission.

I am pleased to designate you as United States Alternate Commissioner on the Kansas-Oklahoma Arkansas River Commission.

I sincerely appreciate your willingness to serve in this capacity and look forward to reports on your work via the Office of Management and Budget.

Sincerely,

A handwritten signature in black ink, appearing to be Barack Obama's signature, written in a cursive style with a large initial 'B' and a horizontal line extending to the right.

Capital Building
Room 2415-Gall
222 SW 7th Street
Topeka, KS 66612



Phone: 785-296-3232
Fax: 785-363-6766
governor@ks.gov

Sam Brownback, Governor

July 13, 2012

Peggy J. Blackburn
1120 Highland
Marion, KS 66861

Re: Kansas-Oklahoma Arkansas River Compact Commission

I understand that you have been excellent commissioner on Kansas-Oklahoma Arkansas River Compact providing a valuable agricultural perspective to the water issues involved. The state of Kansas appreciates your attendance at compact meetings and providing valuable input on behalf of water users and water right holders. I hereby reappoint you as a commissioner to the Kansas-Oklahoma Arkansas River Compact Commission for a term of four years from July 1, 2012 to June 30, 2016.

Your appointment is effective immediately. Thank you for your service in this position on behalf of the state of Kansas.

Sincerely,

A handwritten signature in black ink that reads "Sam Brownback". The signature is written in a cursive style with a large, sweeping initial "S".

Sam Brownback
Governor of the State of Kansas

cc: Dale Rodman, Secretary of Agriculture
David Barfield, Chief Engineer, Division of Water Resources

J. D. STRONG
EXECUTIVE DIRECTOR



MARY FALLIN
GOVERNOR

**STATE OF OKLAHOMA
WATER RESOURCES BOARD**
www.owrb.ok.gov

July 18, 2012

Mr. Earnie Gilder, Vice Chairman
Federal Commissioner
Kansas-Oklahoma Arkansas River Compact Commission
10 Oak Park Lane
Muskogee, OK 73044

Dear Mr. Gilder:

This letter will serve as notice that I will be unable to attend the 2012 Kansas-Oklahoma Arkansas River Compact Commission meeting scheduled for July 25, 2012, in Marion, Kansas. I will be traveling to Washington, D.C. to provide testimony to the House Committee on Science, Space, and Technology regarding drought and NIDIS Reauthorization.

Please accept my designation of Ms. Julie Cunningham, Chief of the Oklahoma Water Resources Board Division of Planning and Management, to act on my behalf as provided in Article IV of the Compact rules.

Best wishes for a successful meeting.

Sincerely,

J.D. Strong
Executive Director

Cc: Mr. David W. Barfield
Ms. Peggy Blackman
Mr. Bruce Falk
Mr. Bryce Benson
Mr. J. Ross Kirtley

AD ASTRA PER ASPERA
Kansas
Department of Agriculture
Division of Water Resources

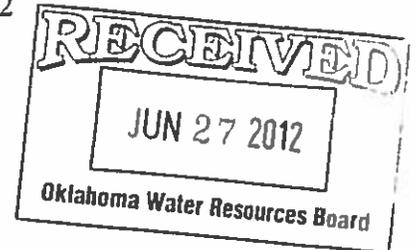
109 SW 9th Street, 2nd Floor
Topeka, Kansas 66612-1283

phone: (785) 296-3717
fax: (785) 296-1176
www.ksda.gov/dvr

Dale A. Rodman, Secretary
David W. Barfield, Chief Engineer

Sam Brownback, Governor

June 21, 2012



Mr. Earnie Gilder, Vice Chair
Kansas-Oklahoma Arkansas River Compact Commission
10 Oak Park Lane
Muskogee, OK 73044

RE: 2012 Kansas-Oklahoma Arkansas River Compact Commission Meeting

Dear Mr. Gilder:

Due to an unavoidable conflict, I will be unable to attend the annual meeting of the Kansas-Oklahoma Arkansas River Compact Commission to be held in Marion, KS on July 18, 2012.

I am hereby appointing Chris Beightel, Program Manager of the Water Management Services Program of the Kansas Department of Agriculture, Division of Water Resources, to act on my behalf as provided in Article IV of the compact rules.

I regret the fact that I will not be able to attend. Best wishes for a successful meeting.

Sincerely,

A handwritten signature in cursive script that reads "David W. Barfield".

David W. Barfield, P.E.
Compact Commissioner for Kansas

PC: JD Strong
Julie Cunningham ✓
Peggy Blackman
Bruce Falk

OKLAHOMA COMMISSIONERS' REPORT

Kansas-Oklahoma
Arkansas River Compact Commission
Marion, Kansas
July 25, 2012



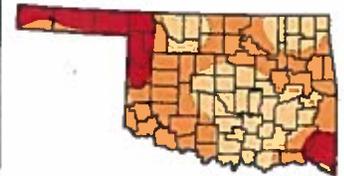
CLIMATE

The ongoing drought episode in Oklahoma continues to worsen. According to the most recent U.S. Drought Monitor, the entire state is now categorized in drought, with more than 64 percent of the state's area in "severe" drought and almost 16 percent classified as "extreme." While rainfall over the past year approaches normal amounts, the North Central and Northeast climate divisions have each received less than one-half inch of precipitation—12 and 14 percent of normal, respectively—over the past 30 days.

U.S. Drought Monitor Oklahoma

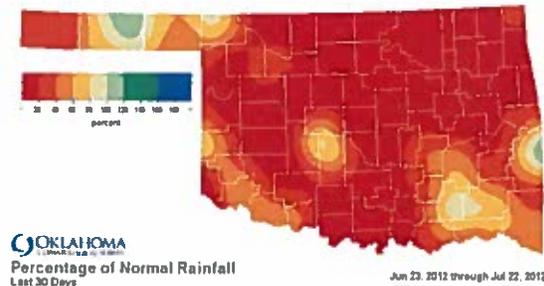
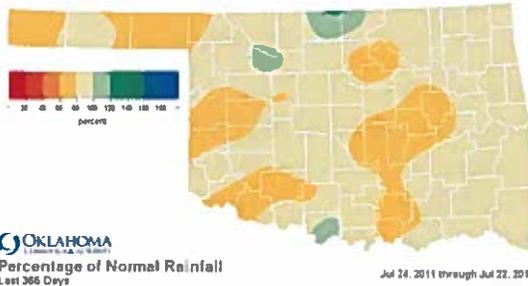
July 17, 2012
Valid 7 a.m. EST

	None	Drought Conditions (Percent Area)				
		D1-D2	D3	D4	D5	D6
Current	0.00	100.00	98.81	64.31	15.48	0.00
Last Week (07-10-2012 map)	0.28	99.72	88.15	38.83	10.83	0.00
3 Months Ago (04-17-2012 map)	24.04	25.08	15.00	9.78	3.38	0.00
Start of Calendar Year (12-27-2011 map)	14.83	85.17	78.76	50.85	27.48	3.33
Start of Water Year (09-07-2011 map)	0.00	100.00	100.00	100.00	78.87	46.42
One Year Ago (07-12-2011 map)	0.00	100.00	98.48	76.84	58.04	42.84



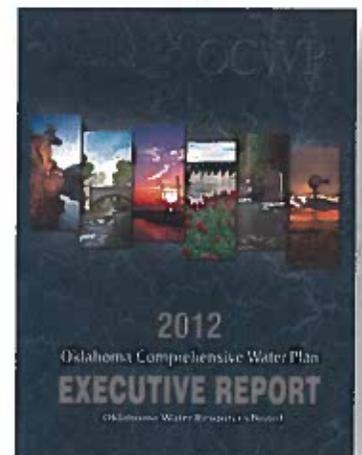
Interpretive

D0 Abnormally Dry	D3 Drought - Severe
D1 Drought - Moderate	D4 Drought - Extreme
D2 Drought - Severe	D5 Drought - Exceptional



OKLAHOMA COMPREHENSIVE WATER PLAN

In October 2011, the OWRB finalized and approved the 2012 Update of the Oklahoma Comprehensive Water Plan, the most ambitious water planning effort ever undertaken by the state. The final OCWP included a wealth of technical data and information assembled into 13 Watershed Planning Region Reports. The reports include water supply/demand assessments, future supply challenges, and potential options to secure water for planning basins and regions through the next 50 years and beyond. Considerable attention was given to creating both sensible and functional planning documents, which will serve as indispensable technical resources for water providers, policy makers, and water users in making informed decisions concerning future local and regional water use and management. The 2012 OCWP Update also features an Executive Report containing eight priority recommendations and thirteen supporting recommendation categories to guide Oklahoma's future water policy decisions.



WATER RESOURCES STUDIES

SURFACE WATER STUDIES

Progress has been made in the development and implementation of stream water allocation models for stream systems in Oklahoma, which are being used as both a planning and water rights management tool. Allocation models have been developed for the Blue River, Muddy Boggy River, Clear Boggy Creek, Kiamichi River, Little River (state line), Upper Canadian, Deep Red, Cache Creek, and Beaver Creek Basins. More recently, allocation models have been developed for the Middle Canadian, Lower Canadian and Little River (central Oklahoma) basins. Hydrologic investigations for these basins are also being completed. Stream water allocation models are currently being constructed for two basins in the Washita River and the Verdigris River systems.

The OWRB and Bureau of Reclamation recently announced a cooperative study of western Oklahoma's Upper Washita River Basin. The study will augment an ongoing hydrologic investigation of the Rush Springs aquifer and ongoing development of the Washita surface water allocation model. Reclamation will directly contribute to the study by identifying the water supply impacts posed by climate variability scenarios as well as formulating options to augment the ability of Foss and Fort Cobb Master Conservancy Districts to satisfy the region's growing water needs.

GROUNDWATER STUDIES

The OWRB is in the process of establishing the Maximum Annual Yield and Equal Proportionate Share for the Arbuckle-Simpson aquifer. After an extensive investigation of the aquifer that began in 2003, the Maximum Annual Yield hearing was held in Sulphur, Oklahoma on May 15-16, 2012. The Hearing Examiner took evidence from multiple parties and will draft a Final Order that will be taken to the Board for final approval.

The Garber-Wellington Water Management Study was initiated in June 2008 to address growing concerns about the future of water availability in central Oklahoma. While the OWRB will use information obtained from the investigation to determine the Maximum Annual Yield of the aquifer, a groundwater-flow model will also be used to predict the impacts of long-term groundwater withdrawals on the aquifer as well as simulate water management strategies. A draft of the USGS Scientific Investigations Report—tentatively titled “Hydrogeology, Hydrologic Framework, and Simulation of Groundwater Flow in the Central Oklahoma (Garber-Wellington) aquifer, Oklahoma, 2012”—is currently under review. The report is scheduled to be finalized in 2013. The study was funded with state monies through the Oklahoma Comprehensive Water Plan and federal funds through the Bureau of Reclamation and U.S. Geological Survey.

The OWRB initiated a study on the Rush Springs aquifer in west-central Oklahoma in October 2011 and will be collecting groundwater and surface water information to better understand the groundwater-flow system. The major goals of the project are to 1) better define the aquifer boundaries, 2) develop a groundwater-flow model, and 3) determine the Maximum Annual Yield of the aquifer. The groundwater-flow model will be used to simulate water management scenarios, project current use impacts, and assess climate variability utilizing available climate modeling information. The OWRB will be working with the Bureau of Reclamation as part of the WaterSMART Program as part of the Bureau's Washita Basin River Basin Water Supply Study. The project is scheduled to be complete by September 30, 2014.

The OWRB entered into a cooperative agreement with the USGS to fund a 20-year Maximum Annual Yield update on the North Canadian River Alluvium and Terrace Groundwater Basin Reach I and II. The objective of this project is to update the 1981 (Reach I) and 1983 (Reach II) hydrologic survey from the Oklahoma Panhandle to Lake Overholser and to develop new groundwater-flow models that will be used to simulate the

effects of groundwater withdrawals. The simulations will be used to evaluate the allocation of water rights within the groundwater basin. The two-year project will be completed by September 30, 2013.

WATER QUALITY PROJECTS & MONITORING

OWRB staff continue to work cooperatively with the Central Oklahoma Master Conservancy District to monitor and improve water quality in Lake Thunderbird where a new system to oxygenate lake water was implemented. The OWRB and other agencies are also finalizing cooperative development of a total maximum daily load (TMDL) calculation to address Thunderbird water quality impairments, including high turbidity, algae, and low dissolved oxygen.

In addition to educating lake managers on the many benefits of establishing aquatic plants, the OWRB is involved in several lake re-vegetation projects, including the establishment of wetland plants at Eucha and floating islands consisting of recycled plastic and aquatic plants at Fort Cobb, a two-year project with the Oklahoma Department of Wildlife Conservation that has already successfully introduced 10 beneficial species to the lake. Work also continued at Stanley Draper, Grand, and Hudson Lakes to establish and spread the growth of native plants that serve as an inexpensive yet innovative method to combat erosion and suspended sediment, reduce nutrients, and provide valuable habitat for birds, fish, and aquatic insects. Funded by EPA, the OWRB continues to collaborate with Oklahoma City to maintain aquatic plant founder colonies at Lake Atoka, which is designated as an impaired waterbody by the ODEQ 303d list for excessive turbidity.

In response to the potential for severe impacts resulting from toxin-producing algae, OWRB staff are working with various states, local, and volunteer monitoring entities to assess the risk from harmful algae blooms. At Lake Texoma, where blue-green algae have become a concern, the Tulsa District Corps of Engineers has been conducting monthly sampling. (Updates are available to the public on the Tulsa District's website.)

Through an ongoing successful partnership with the Grand River Dam Authority, the OWRB continued dissolved oxygen monitoring on both Grand and Hudson Lakes to support Federal Energy Regulatory Commission (FERC) relicensing, and will begin installation and monitoring work in 2012 on W.R. Holway Reservoir to support its relicensing.

The OWRB's groundwater monitoring team assessed Swine Licensed Managed Feeding Operations compliance in an additional 550 wells through a continuing partnership with the Oklahoma Department of Agriculture, Food and Forestry (ODAFF). Staff also acquired a wealth of historical groundwater quality data—now available to the public—to support the Garber-Wellington aquifer study.

The OWRB's Water Quality Division continues to monitor water quality conditions and trends statewide through the Beneficial Use Monitoring Program (BUMP), recognized by EPA as one of the finest state monitoring programs in the nation as it facilitates science-based decision-making concerning Oklahoma's impaired waters. In 2011, BUMP lake sampling underwent a thorough reevaluation and modification to incorporate a probabilistic sampling approach to maximize benefits and efficiencies in the program while reducing expenses.

The OWRB continues to participate in the EPA's National Aquatic Resource Surveys. Monitoring staff are currently gearing up to conduct the National Lakes Assessment with field work initiating this summer. Sampling will be conducted on thirty lakes across Oklahoma and will provide data to assess environmental integrity of the waters. This national study is designed to establish comparable lake conditions between states to facilitate standardized assessment. Work will begin next year on the next round of work to support the National Flowing Waters Study. Staff will collect data to assess wadeable and non-wadeable streams.

Additional OWRB water quality projects include:

- Probabilistic biological monitoring to assess stream ecosystem integrity throughout Oklahoma;
- Confirmatory stream and reservoir monitoring to assess OWQS beneficial use attainment status;
- Monitoring to assist GRDA in management of their reservoirs for ecosystem support;
- Completing cooperative work for ODAFF to investigate pesticides in certain Oklahoma streams.

OKLAHOMA WATER QUALITY STANDARDS

Consistent with the 2003 interstate agreement with Arkansas, OWRB staff initiated the ten-year review of Oklahoma's 0.037 milligram/liter phosphorus standard for Oklahoma's six Scenic Rivers, including the Upper Mountain Fork. A technical advisory group (TAG) consisting of state, federal, and tribal officials and point and nonpoint source dischargers from both states was formed to evaluate the current appropriateness of the numerical standard based on the latest, best scientific information available. At its April 2012 meeting, the OWRB accepted the TAG report and Arkansas TAG minority report and did not direct further action regarding the criterion.

During the fall of 2012, OWRB staff will be initiating its next triennial revision of the OWQS with updates on various human health criteria reflecting new EPA guidance and requirements. Discussions concerning nutrient and chlorophyll-a criteria for Lake Texoma are ongoing with the Texas Water Quality Standards staff. This effort will require substantial coordination between the states for developing criteria and their implementation.

DAM SAFETY PROGRAM

The OWRB Dam Safety Program ensures the safety of more than 4,600 dams in the state and implements statewide hazard prevention through the National Flood Insurance Program. The OWRB conducts inspections and provides public outreach for dam owners, emergency management officials, and floodplain administrators. Special emphasis is being given to emergency action plans, high-hazard reclassification, dam breach inundation maps, and rehabilitation of dams. The OWRB has developed a Dam Inventory Viewer available online at: www.owrb.ok.gov/maps/server/wims.php.

In the past year, the OWRB Dam Safety Program released two new guidelines titled "Hydrologic and Hydraulic Guidelines for Dams in Oklahoma" and "Hazard-Potential Classification Guidelines for Dams in Oklahoma." Also, the OWRB conducted a "Teach the Breach" workshop in Oklahoma City where private and local government dam owners, as well as dam safety engineers, learned about the condition assessment of dams, emergency action plans, and breach inundation maps. In 2011, the OWRB received 13 new/updated Emergency Action Plans, 13 construction/rehabilitation applications, and 74 inspection reports for high and significant hazard dams.

Downstream development has become a significant problem in Oklahoma, as in other states, with nearly 26% of the state's low hazard dams requiring reclassification to a more protective and costly hazard level in the coming years. This presents a tremendous challenge to both the state and dam owners. As of April 2012, there are approximately 615 low hazard and significant dams that could be reclassified to higher hazard classification. Simplified breach inundation maps will be made for dams which, based on field inspections and structural information, appear most likely to be reclassified as high hazard. Site visits have been conducted at approximately 229 dams and 58 simplified breach inundation maps have been completed in the past year.

FLOODPLAIN MANAGEMENT

The OWRB continues to assist communities in adopting new Flood Insurance Rate Maps through the Federal Emergency Management Agency (FEMA) Map Modernization program and RiskMAP. Updated FIRM maps have been issued for 13 counties and 106 participating communities in Oklahoma. Staff also participated in FEMA RISKMap Discovery projects for the Lower North Canadian River Basin, Grand Lake River Basin and Polecat/Snake River Basin. Meetings were held with communities and the public to collect data and information for use in identifying areas that may be eligible for mapping, mitigation, and compliance projects. The OWRB continues to train accredited floodplain administrators in Oklahoma's 389 participating National Flood Insurance Program (NFIP) member communities. With assistance from the Oklahoma Floodplain Managers Association, the OWRB conducted 18 training opportunities in 2011-2012.

The OWRB is also an active participant with FEMA in the Cooperating Technical Partnership (CTP) Program, an innovative approach to fostering working partnerships between FEMA and participating NFIP communities, regional agencies, state agencies, tribes, and universities in the FEMA flood hazard mapping program. The OWRB is currently assisting the communities of Broken Arrow and El Reno with their flood hazard mapping needs.

WATER RESOURCES FINANCING

The OWRB administers the State Financial Assistance Program (FAP), backed by the Statewide Water Development Revolving Fund, which awards loans and grants for the construction and improvement of water and sewer facilities. In all, through the OWRB's five loan and grant programs, almost \$2.7 billion in financing has been approved for water and sewer projects in Oklahoma with a total estimated savings of \$937 million to Oklahoma communities.

PROGRAM	NUMBER AND AMOUNT
FAP Loans	343 for \$778,120,000
CWSRF Loans	253 for \$1,059,158,629
DWSRF Loans	141 for \$761,119,642
REAP Grants	574 for \$50,969,444
Emergency Grants	565 for \$33,725,677
Drought Response Grants	2 for \$200,000
TOTAL	1,878 for \$2,683,293,392

OKLAHOMA STATE LEGISLATURE

The 2012 legislative session resulted in landmark water policy improvements for the State of Oklahoma, including implementation of most of the priority recommendations offered by the 2012 Update of the Oklahoma Comprehensive Water Plan.

- **SB 1975: General Appropriations Bill**—Provides \$6,999,671 to the OWRB, a 27 percent increase over FY-2012. An additional \$1.5 million, coupled with extension to 2016 of the existing Gross Production Tax proceeds pledged to general implementation of the Oklahoma Comprehensive Water Plan, will allow the OWRB to begin implementation of OCWP recommendations, resulting in establishment of Oklahoma's first comprehensive statewide groundwater monitoring program, restoration of the state's comprehensive statewide stream and lake monitoring program to the level realized in the late 1990s, and reducing the growing backlog of statutorily mandated groundwater and stream water allocation studies.
- **HB 3055: Water for 2060 Act**—Establishes a statewide goal to use no more fresh water in 2060 than what is used today. The Act creates a 15-member advisory council—chaired by the OWRB Executive Director with members appointed by the Governor, House Speaker and Senate President Pro Tempore—to make recommendations on water conservation practices and incentives necessary to achieve this goal. The advisory council is required to submit a final report of its findings and

recommendations to the Governor, Speaker of the House of Representatives, and President Pro Tempore of the Senate within three years.

- **HJR 1085: Water Infrastructure Credit Enhancement Reserve Fund**—Sends State Question 764 to a vote of the people in November's general election. Approval of SQ 764 would create the Credit Enhancement Reserve Fund, which would allow the OWRB to increase the leveraging capacity of the State Financial Assistance Program sufficient to address the identified \$82 billion water and wastewater infrastructure financing need in Oklahoma over the next 50 years.
- **HB 1910: Water Well Drilling Inspection and Compliance**—Grants the OWRB authority to inspect specific water wells upon consent of the landowner or as allowed by district court order and disapprove use of any well found to be noncompliant with state laws and regulations. The bill also authorizes the OWRB to prepare exams and other licensing requirements for water well drillers and pump installers.
- **HB 2835: Gray Water Reuse**—Allows for the use of up to 250 gallons per day of private, residential gray water for household gardening, composting or landscape irrigation without a permit from the Oklahoma Department of Environmental Quality. (Greywater is wastewater generated from domestic activities—laundry, dishwashing, bathing, etc.—that can be recycled on-site for landscape irrigation and related uses. Greywater does not contain human waste.) The bill also establishes requirements of approved gray water systems.
- **SB 1043: Water Reuse**—Requires DEQ, no later than July 1, 2013, to promulgate rules for the indirect potable reuse of treated wastewater. By August 31 of this year, DEQ is also required to convene a workgroup of municipalities, consulting engineers, technical experts, and the general public to explore opportunities for water reuse and to review and make recommendations on rules defining indirect potable reuse.
- **SJR91: Municipal Water Reuse Rules**—A Joint Resolution approving permanent Department of Environmental Quality rules relating to municipal water reuse.

LEGAL MATTERS

On August 18, 2011, the Chickasaw and Choctaw Nations filed a lawsuit in U.S. District Court for the Western District of Oklahoma. As subsequently amended, the lawsuit names as defendants Gov. Mary Fallin, OWRB members and Executive Director, the City of Oklahoma City and Oklahoma City Water Utility Trust (OCWUT). The lawsuit alleges the Nations have federally-protected rights to the water within a 22-county territory in southeastern Oklahoma. Among other things, the lawsuit seeks (1) declaratory judgments against any action by the OWRB on a pending application by Oklahoma City and OCWUT for a permit to use stream water from Sardis Reservoir in southeastern Oklahoma, or any other withdrawal or export of water from the area at issue, unless and until there is initiated a general stream adjudication that satisfies the requirements of the federal law known as the McCarran Amendment; and (2) permanent injunctions against any such action unless and until a general stream adjudication that satisfies the McCarran Amendment is completed. In December, the OWRB authorized its counsel to institute adjudication proceedings, if necessary, to fairly and accurately determine all rights to the use of water in the Kiamichi, Clear Boggy, and Muddy Boggy stream systems.

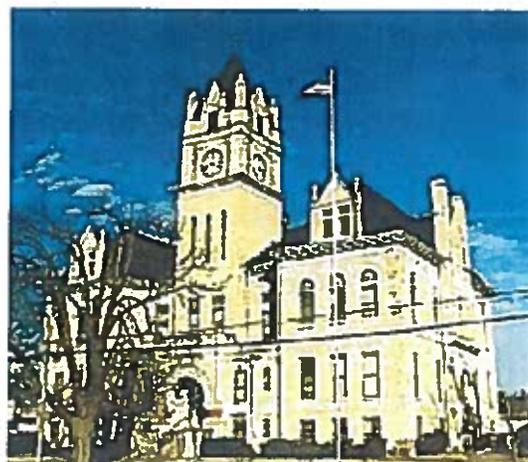
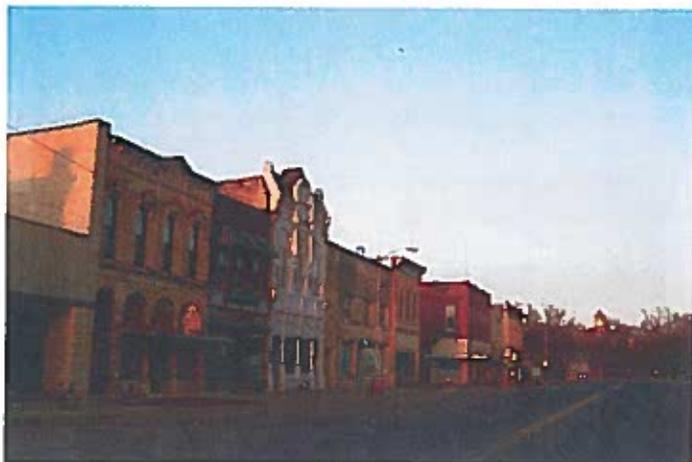
On March 27, 2012, the federal court issued an order to stay formal proceedings (put the case on hold) for 60 days to allow more time for mediation among the parties. On May 23, the stay was extended for another 60 days by the federal court. Frances McGovern is the federal court mediator.

OKLAHOMA GOVERNOR'S WATER CONFERENCE & RESEARCH SYMPOSIUM

In October, the OWRB and Oklahoma Water Resources Research Institute co-hosted the 32nd Annual Oklahoma Governor's Water Conference and Water Symposium in Norman. The meeting was highlighted by the formal release of the *2012 Update of the Oklahoma Comprehensive Water Plan*.

The 33rd Annual Oklahoma Governor's Water Conference & 10th Annual Water Resources Research Symposium will be held on November 13-14, 2012 at the Tulsa Marriott Southern Hills.

**Report of the Kansas Commissioners
to the
KANSAS-OKLAHOMA ARKANSAS RIVER COMMISSION
Annual Meeting – Marion, Kansas
July 25, 2012**



Kansas Commissioners

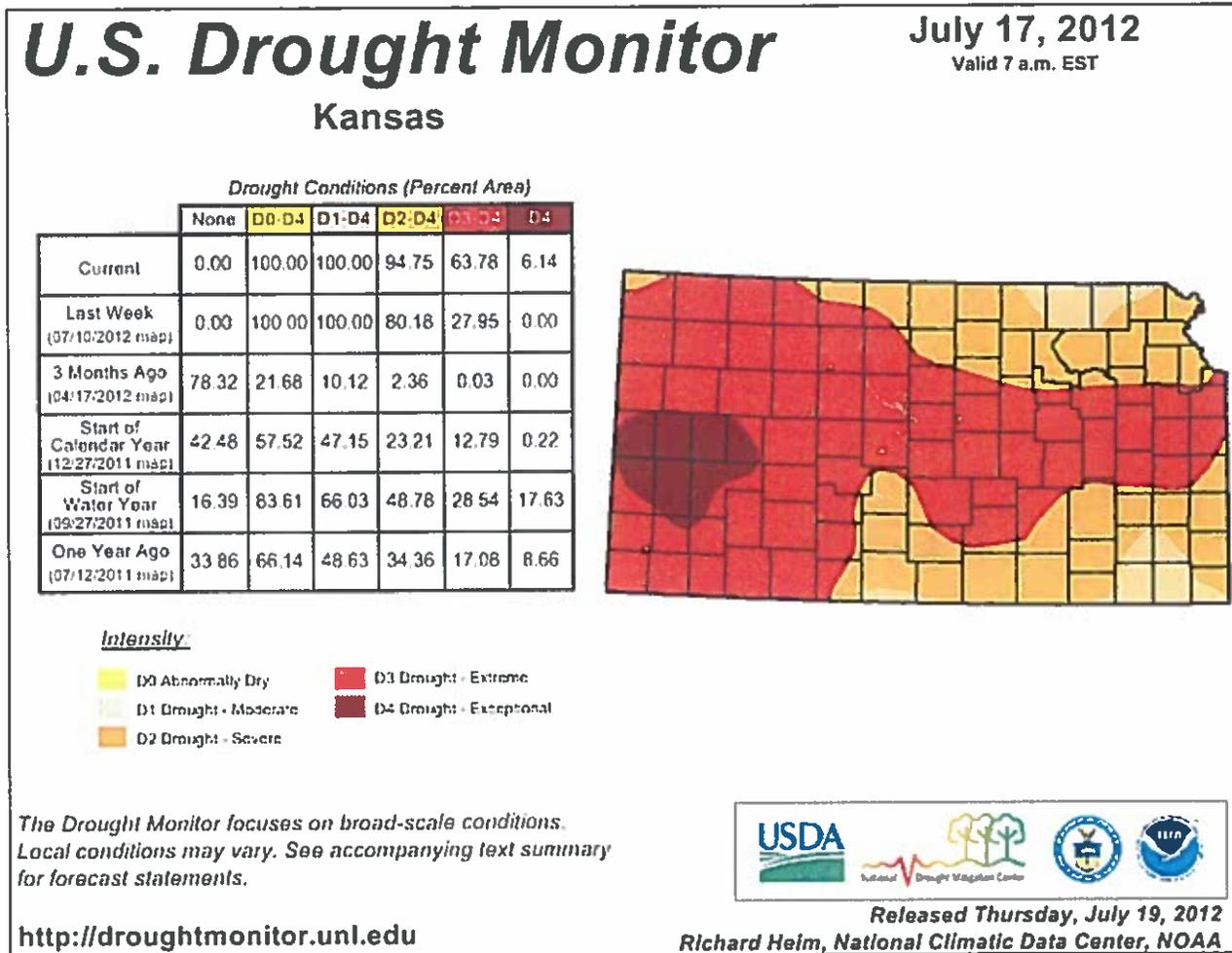
Commissioner **David Barfield**, Chief Engineer of the Kansas Department of Agriculture's Division of Water Resources, continues to serve by virtue of his office. Mr. Barfield was unavailable to attend the 2012 annual meeting and has delegated Chris Beightel, Manager of the Water Management Services Program, to serve on his behalf.

Commissioner **Peggy Blackman** is currently serving an appointed four-year term beginning June 17, 2009. Ms. Blackman resides in Marion, Kansas. She is vice chair of the Neosho Basin Advisory Committee and coordinator of the Marion Reservoir Watershed Restoration and Protection Strategies (WRAPS) Implementation & Assessment Workgroup. She was mayor of the City of Marion from 1977-1986.

Commissioner **Bruce Falk** was recently appointed commissioner by Governor Brownback. Mr. Falk's four-year term began in July, 2011. Mr. Falk resides in Stafford, Kansas. He served the Kansas Department of Agriculture, Division of Water Resources for 35 years including 16 years as water commissioner in the division's Stafford Field Office.

Climate Conditions

Last Year (2011); As a result of strong La Niña, a large portion of south-central and south-west Kansas experienced its worst single year of drought on record with both extreme dryness and heat. As a result of the severe drought, a significant amount of water administration occurred in the state. In addition, early in the year water users indicated the need for additional pumping authorization (beyond their annual authorized quantity) to complete their 2011 irrigation. For this extreme condition, the Division developed the 2011 drought emergency term permit which allowed water users to borrow from their 2012 authorized quantity to complete their 2011 use. Over 2200 drought term permits were granted. The drought also created interest in revisions to the multi-year flex account program (see below).



This year (2012); Extreme heat and drought have persisted through this year causing great challenges to agriculture and water management. According to the National Weather Service Climate Prediction Center, As of July 10, over 60% of the contiguous United States was in drought and the drought is expected to continue for the next few months at least.

Minimum Desirable Streamflows: DWR is currently administering 243 water rights on 10 streams where the statutory criteria for minimum desirable streamflows have been met. Several other streams in the state are experiencing loss of streamflow and will likely come under administration in the next few days or weeks. This year will likely set a record for the number of files administered for MDS in a year. MDS was established to protect ecological, water quality, and domestic needs.

Agriculture: As of the week ending July 22, 2012, over 50% of the corn, soybeans, and sorghum in the Kansas were rated in the very poor to poor categories by USDA. 64% of topsoil was rated very short of moisture with only 5% rated adequate and none with surplus. Since hot and dry conditions prevented pollination of many row crops, many producers have decided to chop their non-irrigated corn for silage. If Governor Brownback's latest request to add 37 additional counties to the USDA drought disaster declaration is approved, 103 of Kansas' 105 counties will be declared disaster areas.

Wildfire: A wildfire broke out in Decatur County in northwestern Kansas in late June and burned about 5,000 acres before being extinguished.

Upper Arkansas River Basin: A significantly less than average snowpack combined with the hot, dry conditions downstream have resulted in a very short water supply from the Arkansas River in Colorado and western Kansas. Kansas accounts in John Martin Reservoir on the Arkansas River in Colorado are so low and river conditions are so poor, that Kansas ditches are considering leaving the water in the reservoir in hopes of more favorable conditions. The median flow of the Arkansas River at the Colorado-Kansas state line is about 30 cfs this time of year. Currently the flow is 1.0 cfs.

State Budget

Kansas state government revenues have steadily improved. DWR has filled a handful of our most critical vacant positions, but the outlook for the next few years is very uncertain. The 2012 Legislature made some bold moves both on the revenue side and on spending by state agencies. Most notably, Governor Brownback signed a bill that cuts state income tax by \$3.7 billion over five years. Kansas' recent annual budget is on the order of \$14.2 billion. The Legislature also eliminated 80% of state positions that had been vacant for more than 120 days. For DWR this eliminated 25 full-time positions and 7 half-time positions, or about 27% of the division

Legislation: The year's legislative session has been the most significant for water legislation in many years if not decades. Legislation was driven by responses to the drought of 2011 and by the Governor's Ogallala initiative. The more significant water legislation included:

SB 272 amends an existing statutory provision allowing for multi-year flex accounts (MYFA) to provide more options under the program. A MYFA is a 5-year term permit which temporarily replaces a groundwater water right, allowing the annual authorized quantity to be exceeded but limiting the pumping over 5-years to the long-term average. While enacted in 2001, the program had little participation as water users believed it required too much conservation in exchange for this flexibility. The water conservation requirement was removed and two options for computing the flex account amount provided.

SB 310 amends the Groundwater Management District (GMD) Act to allow GMDs to develop Local Enhanced Management Areas (LEMAs), as an alternative to the existing Intensive Groundwater Use Control Area process. The new process allows GMD's and stakeholders to propose to the chief engineer their own specific corrective controls to address water resource issues. The chief engineer then holds a hearing, focused solely on the locally proposed plan, to determine whether to accept the plan, reject the plan or send it back for modification. DWR is currently working with Northwest Kansas GMD No. 4 to implement a LEMA in their Sheridan County high priority area.

HB 2451 amends the water appropriation act to eliminate the "use it or lose it" clause for ground water rights in areas formally closed to new water right development to protect those rights from forfeiture.

HB 2516 amends the Kansas water banking act to allow for additional water banks and to provide for more permanence of such banks.

HB 2517 extends the Water Right Transition Assistance Program (WTAP) for an additional ten years.

SB 148 establishes in statute procedures for division of water rights.

Regulations:

K.A.R. 5-9-3 (quantity of Water for Temporary Permits, for Fracking). We have proposed amendment of this rule to expand the amount of water that can be permitted under temporary permit from 1 million gallons to 4 million gallons. This will facilitate our permitting of water for fracking. We are working on regulations to implement the provisions of SB 272 and SB 310 noted above.

Since July, 2011, DWR has received about 900 applications for temporary or term permits for oil well drilling operations. Though we don't specifically track whether these applications are for horizontal or conventional drilling, we have observed from the application information that less than half of these are horizontal drilling (fracking) operations. We have received a number of applications for term permits that involve exporting water from Kansas to use in operations across the border in Oklahoma. We have not encountered any problems or concerns with these applications from Kansas' perspective, but we are aware that these particular situations will require coordination between the states.

Litigation:

Kansas v. Nebraska and Colorado: On April 4, 2011, the U.S. Supreme Court issued an order accepting Kansas' May 3, 2010 request to file suit seeking enforcement of the Republican River Compact and the Court's decree approving the final settlement stipulation of 2003. The Court appointed William J. Kayatta, Jr., of Portland, Maine as Special Master in the case. The Special Master has scheduled trial for August 13-31 in Portland, Maine.

--- End of report ---

Treasurers Report
 Kansas – Arkansas River
 Compact Commission
 FY 2012 Expenditures and Summary
 (July1, 2011 thru June 30, 2012)

1. At the 2011 annual meeting held in Oklahoma City, a resolution was approved and signed by the Compact Commission which established Julie Cunningham of the Oklahoma Water Resources Board to assume the responsibilities of Compact Secretary, and Bob Lytle of the Kansas Division of Water Resources to assume the responsibilities of Compact Treasurer, replacing Harold Springer who had served in those capacities for the past several years as the sole paid employee of the Compact Commission. The duties of Secretary and Treasurer are to rotate between the states on a two year basis. This resolution also authorized the acquisition of a new bank account that had braches in Oklahoma City, OK and Topeka, KS.
2. During the remainder of 2011 attempts were made to close the current account held by the Compact with U.S. Bank and open a new account with Bank of America. These attempts failed for numerous reasons related mostly to large changes in banking laws since the opening of the account with U.S. bank in the mid 80s.
3. In 2012, with the proper items secured, including the approval, signing and notarization of Resolution 2012-1, which further enumerated the purpose of the Compacts and it's Commission, and the establishment of a Federal Employer Identification Number, a new account with Bank of America was established with Julie Cunningham and Bob Lytle as singers to the account, and the account with U.S. Bank was closed and the funds within transferred.
4. Below is a ledger of the financial transactions that have taken place since establishing the account:

Balance as of 3-2-12
 \$ 9,920.39

Check#	Date	Description	Amount	Balance
	3-2-12	Transfer of funds from U.S. Bank	\$9,920.39	\$9,920.39
	3-26-12	Deposit KS 2012 Assessment	\$2,900.00	\$12,820.39
	4-11-12	Deposit OK 2012 Assessment	\$2,900.00	\$15,720.39
	4-13-12	Interest accrued	\$.07	\$15,720.46
1001	4-13-12	M&M Insurance (Bond)	\$117.00	\$15,603.46
	4-13-12	Reimbursement for Account opening	\$100.00	\$15,503.46

Balance as of 7-11-12
 \$15,503.46

Outstanding expenditures for FY2012	Estimated Cost
Mailings	\$14.50
Audit	\$450.00
Printing Annual Reports	\$275.00
Total	<u>\$739.50</u>

Expected 2012 Year End Balance
 \$14,763.96

KANSAS – OKLAHOMA ARKANSAS RIVER COMPACT COMMISSION
ENGINEERING COMMITTEE REPORT

July 25, 2012
Historic Elgin Hotel
Marion, Kansas

This report covers the time period from July 1, 2011 through June 30, 2012. The report contains the standard updating of streamflow data, water quality data, and construction of reservoir conservation storage capacities in the compact basin areas.

The 2011 water year flow totals were significantly below historic averages for all the gaging stations reported upon for the compact.

Stream water quality data for selected water quality stations in Kansas is attached.

The Engineering Committee reports that there was one new water structure completed in Kansas during the July 1, 2010 through June 30, 2011 time period that exceeded the 100 acre-foot conservation storage minimum requirement. No new conservation storage was completed in Oklahoma. The Kansas reservoir is listed below:

Jessee Pond Jessee Grain
Storage in AF 116
16-33-25E Cherokee County
Grand – Neosho Basin

Respectfully submitted by the Engineering Committee.



Robert F. Lytle Jr., Member



Julie Cunningham, Member

FLOW DATA
KANSAS-OKLAHOMA ARKANSAS RIVER COMPACT
WATER YEAR 2011 (OKLAHOMA)

<u>Station</u>	Discharge (Acre-Feet)	
Caney River near Ramona, Oklahoma USGS Gage No. 07175500		
Annual WY – 2011	233,825	(323 cfs)
28 Year Average	1,190,120	(1,644 cfs)
Chikaskia River near Blackwell, Oklahoma USGS Gage No. 07152000		
Annual WY – 2011	73,840	(102 cfs)
75 Year Average	450,276	(622 cfs)
Cimarron River near Waynoka, Oklahoma USGS Gage No. 07158000		
Annual WY – 2011	23,165	(32 cfs)
73 Year Average	201,973	(279 cfs)
Neosho River near Commerce, Oklahoma USGS Gage No. 077185000		
Annual WY – 2011	1,155,372	(1,596 cfs)
72 Year Average	2,790,702	(3,855 cfs)
Salt Fork Arkansas at Tonkawa, Oklahoma USGS Gage No. 07151000		
Annual WY – 2010	196,415	(147 cfs)
69 Year Average	681,930	(942 cfs)

WATER YEAR 2011 (KANSAS)

Verdigris River at Independence, KS USGS Gage No. 071705000		
Annual WY – 2011	256,270	(354 cfs)
43 Year Average	1,637,502	(2,262 cfs)
Arkansas River at Arkansas City, KS USGS Gage No. 07146500		
Annual WY – 2011	387,300	(535 cfs)
108 Year Average	1,422,498	(1,965 cfs)

WATER YEAR 2011

	<u>Minimum</u>	<u>Maximum</u>
<u>Station 000214</u> <u>Neosho River near Chetopa</u>		
TDS (mg/L)	249	400
Hardness (mg/L)	180	311
Spec. Cond. (umhos/cm)	424	659
Water Temperature (C)	4	28
<u>Station 000215</u> <u>Verdigris River near Coffeyville</u>		
TDS (mg/L)	226	328
Hardness (mg/L)	154	237
Spec. Cond. (umhos/cm)	378	569
Water Temperature (C)	9	28
<u>Station 000218</u> <u>Arkansas River near Arkansas City</u>		
TDS (mg/L)	955	1128
Hardness (mg/L)	270	334
Spec. Cond. (umhos/cm)	1636	2065
Water Temperature (C)	3	33
<u>Station 000529</u> <u>Chikaskia River near Corbin</u>		
TDS (mg/L)	339	406
Hardness (mg/L)	225	278
Spec. Cond. (umhos/cm)	592	689
Water Temperature (C)	3	34
<u>Station 000566</u> <u>Neosho River near Oswego</u>		
TDS (mg/L)	280	399
Hardness (mg/L)	217	315
Spec. Cond. (umhos/cm)	479	655
Water Temperature (C)	4	29

Kansas – Oklahoma Arkansas River Commission
Proposed Budget – FY 2013
(July 1, 2012 thru June 30, 2013)

Expenses	
Printing / Mailing Reports (2011)	\$500
Annual Audit	\$600
Treasurer's Bond	\$200
Annual Meeting	\$400
Incidentals	\$300
Total	\$2,000

Cash on Hand as of July 1, 2012 \$15,500

Kansas Assessment \$2,900 Oklahoma Assessment \$2,900

Total = \$15,500 + \$5,800 - \$2,000 = \$19,300 projected balance for end of FY2013

Proposed Budget – FY 2014
(July 1, 2013 thru June 30, 2014)

Expenses	
Printing / Mailing Reports (2012)	\$550
Annual Audit	\$600
Treasurer's Bond	\$200
Annual Meeting	\$400
Incidentals	\$350
Total	\$2,100

Estimated Cash on Hand as of July 1, 2013 \$19,300

Kansas Assessment \$2,900 Oklahoma Assessment \$2,900

Total = \$19,300 + \$5,800 - \$2,100 = \$23,000 projected balance for end of FY2014

ALTERNATE PROPOSED BUDGET - 2013 FISCAL YEAR

July 1, 2012 to June 30, 2013

Office expenses, Postage, Copying	\$3,600.00
Printing reports	475.00
Annual audit	575.00
Treasurer's bond	200.00
<u>Annual meeting</u>	<u>450.00</u>
TOTAL	\$5,300.00
Budget for 2013 Fiscal Year	\$5,300.00
Contingency fund	1,500.00
Total funds needed for 2013 Fiscal Year	6,800.00
Estimated carryover on June 30, 2012	<u>1,000.00</u>
Actual funds needed for 2013 Fiscal Year	\$5,800.00
Kansas Share	\$ 2,900.00
Oklahoma Share	\$ 2,900.00

RECLAMATION

Managing Water in the West

Reclamation Activity Report

Oklahoma-Texas Area Office



U.S. Department of the Interior
Bureau of Reclamation
Great Plains Region

July 2012

Mission Statements

The mission of the *Department of the Interior* is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

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.

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Introduction

The Bureau of Reclamation (Reclamation) is an agency within the Department of the Interior. The primary mission of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner within the 17 western states.

The Oklahoma-Texas Area Office (OTAO) is responsible for administering 11 reservoir projects and associated water distribution systems in southern Kansas, Oklahoma, and Texas. The combined water delivery is more than 680,000 acre-feet of Municipal and Industrial (M&I) annually to approximately three million customers. The projects also provide fish and wildlife, recreation, and flood control benefits. The area supports two Irrigation Districts, one in Oklahoma and one in Texas.

Reclamation works in conjunction with other federal and state agencies, Indian tribes, and local entities in performing these responsibilities. Significant areas of activity include providing oversight of operations and maintenance (O&M) of existing facilities and water resources planning, along with construction assistance.

The purpose of this activity report is to provide a selected summary of current and recently completed activities within the area.

Ongoing and Recently Completed Activities

Planning Program

General Investigations

Texas Brackish and Impaired Water (TX), Special Study

Status: Ongoing

Description: This study includes four main activities that further the Texas Water Development Board (TWDB) innovative water technologies program:

1. Advancing stormwater harvesting,
2. Advancing water reuse,
3. Advancing Aquifer Storage and Recovery (ASR), and
4. Advancing seawater/brackish desalination

These activities involve an evaluation of the political, institutional, regulatory, and technical issues associated with the advancement of innovative water management solutions in Texas. Based on data acquired, the TWDB will make recommendations on how to most efficiently implement the Texas Innovative Water Technologies Program.

High Plains Ogallala Aquifer (KS), Special Study

Status: Ongoing

Description: Reclamation is collaborating with the Kansas Water Office (KWO), Southwest Groundwater Management District No. 3 (GMD3) and the Kansas Geological Survey (KGS) to study and obtain an understanding of Ogallala Aquifer characteristics through development of a transient groundwater model of the area under the jurisdiction of GMD3. The model will be used to:

1. Characterize Aquifer subunits,
2. Determine water budgets, and
3. Test the possible Aquifer responses to various management scenarios

The study will also incorporate a regional economic impact analysis to determine the most efficient policy options aimed at achieving sustainability goals to extend the economic life of the aquifer.

The Kansas State Water Plan set objectives for 2010 of reducing water level decline rates within the Ogallala Aquifer and implementing enhanced water management in target areas. Models are anticipated to be completed by the end of FY 2010.

South Central Regional Assessment (OK), Special Study

Status: Ongoing

Description: The study is intended to characterize the Garber-Wellington Aquifer (GWA) in south-central Oklahoma in terms of:

1. Geologic framework,
2. Aquifer boundaries,
3. Hydraulic properties,
4. Water levels,
5. Groundwater flow, and
6. Water budget

The study will develop a digital, transient groundwater flow model that will be used to evaluate the allocation of water rights and simulate water movement within the aquifer for the purposes of developing management options to ensure a dependable water supply for future growth. Results of the study are expected by the end of FY 2011.

Fort Cobb Reservoir (OK), Appraisal Investigation of Alternatives for Water Augmentation

Status: Ongoing

Description: This study is an investigation of alternatives to augment the water supply of the Fort Cobb Reservoir Division, Washita Basin Project, Oklahoma.

Fort Cobb Reservoir provides Municipal and Industrial (M&I) water to several power generation facilities, the City of Anadarko, and the City of Chickasha. A previously completed appraisal study in 2006 evaluated alternatives to expand the capacity of the delivery system and recommended that alternatives to augment the water supply of the reservoir should be investigated before any decision is made relating to conveyance system expansion. Previous studies indicate that demand will exceed supply by 2030. Reclamation held a project alternative meeting with the stakeholders to identify potential alternatives.

The draft report is pending subject to the firm yield re-evaluation of all Oklahoma Reservoirs constructed by Reclamation. The firm yield ascertained by the evaluations will address climate change, as well as other changes in reservoir conditions.

General Investigations – RECENTLY COMPLETED

Oklahoma Comprehensive Water Plan (OK), Special Study

Status: Complete

Description: The first phase of this study consists of modernizing the state water rights administration database. The second phase consists of developing hydrologic models to update and/or confirm the firm yield of seven Reclamation reservoirs in Oklahoma.

Additional phases include, but were not limited to:

1. Technical and engineering studies to identify areas with aging infrastructure,
2. Evaluation of regional and local water supply/demand gaps, which includes development of multi-parameter models to calculate the maximum sustainable yield of State aquifers,
3. Identification of regional and local water management strategies, and
4. Water allocation modeling to determine the feasibility of implementing water management solutions

The water plan was recently completed in FY 2012.

Arbuckle-Simpson Aquifer (OK), Water Resources Management Special Study

Status: Complete

Description: During recent years, a number of issues have emerged which have caused concern about the utilization and continued depletion and sustainability of the Arbuckle-Simpson Aquifer. These issues include concern over water use, competition for water, pumping and delivering water to areas beyond the recharge zones of the aquifer, as well as water quality. In order to assure the future well-being of the aquifer, the Oklahoma Water Resources Board (OWRB) entered into a cost-sharing agreement with Reclamation to undertake a five year study of the aquifer hydrology including detailed assessments of the formations hydrogeology, water quality and vulnerability, and the groundwater-surface water interactions.

The aquifer has been designated a sole source aquifer by the EPA. The health and economic future of a large number of Oklahoma residents is dependent upon protecting the quantity and quality of water in the aquifer. The aquifer is an important source of water supply for the citizens of Ada, Sulphur, Mill Creek, and Roff; the Chickasaw National Recreational Area; rural water districts; and many farmers and ranchers owning land overlying the aquifer. Contributions from the aquifer also provide perennial flows for many streams and natural springs in the area.

A public meeting was held in August 2009 to discuss the results of the study and seek public comments on potential aquifer management scenarios. Final steps are being undertaken by the OWRB to combine the science with public input to make policy recommendations to the State Legislature on how the aquifer may be managed in the future. The study was completed at the end of FY 2009. Final reports were made available in 2010.

Norman Project (OK), Critical Need Water Supply Study

Status: Complete

Description: This study evaluated the operational changes necessary to store and regulate non-project water purchased from the City of Oklahoma City. Preliminary results indicate that importation of water during times of drought is an effective means to augment the yield of the reservoir with minimal environmental impact and no cost to the Federal Government. The next phases of the study will address the long-term water supply needs and will include an evaluation of other alternatives (i.e., water reuse) that are beyond the short-term solution of purchasing and storing non-project water.

Lake Thunderbird, located on the Little River in central Oklahoma, was constructed as part of the Norman Project for Municipal and Industrial (M&I) water supply, flood control, recreation, and Fish & Wildlife purposes. The Central Oklahoma Master Conservancy District (COMCD), the project water right holder, currently provides water to the member cities of Del City, Midwest City, and Norman. Reclamation completed an appraisal study in August 2005 which concluded that additional water needs exist and Lake Thunderbird could store and regulate non-project water to augment current supplies.

High Plains Ogallala Aquifer (TX), Special Study

Status: Complete

Description: Past land use changes have greatly impacted water resources in the Texas High Plains, often with opposing impacts on water quantity and quality. Reclamation, in partnership with the University of Texas, Bureau of Economic Geology, and the Texas Water Development Board, undertook the study to increase the understanding of the processes, including irrigated return flows and control of diffuse natural recharge to the Ogallala Aquifer which results from the conversion of rangeland to dry land agriculture operations. The study is complete and final results were provided as a report in 2011.

Native American Technical Assistance – ONGOING

Caddo Nation (OK), Rush Springs Groundwater/Surface Water Interaction and Rush Springs Spring Inventory

Status: Ongoing

Description: The Caddo Nation is concerned with the long term depletion of the Rush Springs Aquifer.

Reclamation has entered into an agreement with the USGS to gather data for a study that will determine the location of springs and wetlands as well as the estimate the yield of the Rush Springs Aquifer in a specified area of the Caddo Nation.

Kickapoo Tribe of Oklahoma (OK), Defining the Extent of Radionuclides and Trace Metals in Domestic Well Water

Status: Ongoing

Description: The radionuclides gross alpha/beta particles, radium 226/228, uranium, and the potential radon in the groundwater are a concern for the Kickapoo Tribe in Lincoln and Pottawatomie counties of Oklahoma.

Concentrations of radionuclides in the groundwater used by surrounding households of tribal and non-tribal members are unknown and may occur at levels where health problems may be a concern. The U. S. Geological Survey (USGS) and the Kickapoo Tribe will determine the extent and concentrations of gross alpha/beta, radon, radium 226/228, uranium, arsenic, chromium, and selenium in domestic well water in selected areas of the Kickapoo Tribal lands in Lincoln and Pottawatomie counties of Oklahoma.

The work is expected to be completed in FY 2013.

Kickapoo Nation of Oklahoma (OK), Assessment of Water Supply Systems

Status: Ongoing

Description: The Kickapoo Nation requested Reclamation to perform an assessment of six water supply systems within the Nation.

The assessment would identify deficiencies in the existing systems including alternatives for connecting the systems together and connecting the existing system for service of outlying residents.

The work is expected to be completed in FY 2013.

Muscogee Creek Nation (OK), Assessment of Water and Wastewater for Indian communities in Weleetka and Wetumka, Oklahoma**Status:** Ongoing**Description:** Reclamation is undertaking an assessment of the water and wastewater issues that would identify deficiencies in the existing systems including alternatives for addressing such issues.

The Muscogee Creek Nation of Oklahoma is located in the East Central portion of Oklahoma spanning approximately 7,873 square miles. The Tribe has a complex jurisdiction, which is a checker board of trust lands, restricted lands, allotted lands, and dependent Indian communities. The Chartered Indian Communities of the Tribe are dependent on the local area governments to provide adequate water and sewage services to each home and community facility.

Native American Technical Assistance – RECENTLY COMPLETED***Alabama-Quassarte Tribal Town (OK), Needs Assessment of Water Supply and Waste Water Systems*****Status:** Complete (FY 2012)**Description:** The Alabama-Quassarte Tribal Town officials requested Reclamation assistance in determining the current state of the existing water system, assessing the future demand for water and wastewater, and recommending improvements for the development of a water and wastewater system located on the tribal trust property.***Cherokee Nation (OK), Water Infrastructure Assessment*****Status:** Complete (FY 2012)**Description:** A large Native American population is located in northern Adair and southern Delaware counties in northeast Oklahoma and the inhabitants are without access to public water supplies. Currently, this population depends on groundwater wells for water supply. A majority of these wells have issues related to yield, fecal coliform contamination, and secondary containments such as iron, manganese, and hydrogen sulfide. A small number of homes may use springs, or other untreated and unprotected surface water supplies, for drinking water.

The Cherokee Nation is interested in providing treatment and distribution services to several communities. This may be accomplished through assistance of the existing rural water districts by expansion or development of a water supply project for the area. The Cherokee Nation is a federally recognized Indian Tribe in Oklahoma. The tribal headquarters is located in Tahlequah, Oklahoma, 60 miles east of Tulsa.

Pawnee Nation (OK), Wellhead Protection Plan**Status:** Complete (FY 2012)**Description:** The Pawnee Nation is concerned about contamination of shallow public water supply wells in Pawnee County, Oklahoma. The Nation is preparing a water management plan for Black Bear Creek and would like to include a well protection plan for these public supply wells.

Reclamation will undertake the following task:

1. Identification of the groundwater flow direction,
2. Source water delineation for the existing wells,
3. Identification of the zone of influence in the existing wells, and
4. Potential contaminants within the zone of influence and adjacent surface areas in close proximity to the wells

Construction Assistance

Lower Rio Grande Valley Water Conservation and Improvement Program (TX)

Status: Ongoing

Description: Construction of 19 projects was authorized by P.L. 106-576 and amendment P.L. 107-351, in 2000 and 2002, respectively. The law specifies that the federal share of the total project costs for each project will be up to 50 percent, capped at \$55 million. Other parties participating in various aspects of the Lower Rio Grande Valley Program are the Texas Water Development Board (TWDB), North American Development Bank (NAD), and Texas A&M University. Construction of thirteen of the 19 authorized projects has been initiated, nine of which are complete and operational. In general, construction activities have significantly outpaced congressional funding. After the original 19 authorized projects have been constructed, the estimate of water savings is approximately 83,000 acre-feet (ac-ft) of water, 7.5 million kWh of energy, and \$781,000 in operation and maintenance expenses annually.

Equus Beds (KS), Aquifer Storage and Recovery Project, Equus Beds Division, Wichita Project, Kansas

Status: Ongoing

Description: The Equus Beds Aquifer has experienced groundwater declines of up to 40 feet since 1950. P.L. 109-299 authorized Reclamation to fund up to 25 percent, capped at \$30,000,000 (2003 indexed), of the total estimated construction cost to financially assist the City of Wichita, Kansas in the plan, design, and construction of infrastructure to divert 100 million gallons per day of flood flows from the Little Arkansas River for storage and recovery in the Equus Beds Aquifer. Reclamation completed an Environmental Impact Statement and the Record of Decision in 2010. Construction is underway at this time.

See Program Brochure for additional Water Planning and Construction Assistance information.

Reclamation Wide Programs

WaterSMART Program

Water is our most precious natural resource and is increasingly stressed by the demands society places on the resource. 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 the scientific literature and scientists are forecasting changes in weather patterns and impact on the hydrologic cycles.

Congress recognized these issues with 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 fresh water supplies, and take action to secure water resources for the communities, economies, and the ecosystems the resources support.

To implement the SECURE Water Act, and ensure that the Department of the Interior is positioned to meet these challenges, Secretary Salazar established the WaterSMART program in February 2010. WaterSMART allows all bureaus and agencies within the Department to work with States, Tribes, local governments, and non-governmental organizations to pursue a sustainable water supply for the Nation by establishing a framework to provide federal leadership and 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 Interior 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. For more information about WaterSMART program elements please reference the website at <http://www.usbr.gov/WaterSMART/> if you have any questions or need additional information, please contact AOMorgan@usbr.gov

See Program Brochure for additional information on the WaterSMART Program.

WaterSMART Grants

WaterSMART Grants: provide cost-shared funding for the following types of projects:

- Water and Energy Efficiency Grants – For projects that save water, improve energy efficiency, address endangered species and other environmental issues, and facilitate transfers to new uses.

<http://www.usbr.gov/WaterSMART/weeg/index.html>

- System Optimization Review Grants – A System Optimization Review is a broad look at system-wide efficiency focused on improving efficiency and operations of a water delivery system, water district, or water basin. The Review results in a plan of action that focuses on improving efficiency and operations on a regional and basin perspective.

<http://www.usbr.gov/WaterSMART/sor/index.html>

- Advanced Water Treatment and Pilot and Demonstration Project Grants – For pilot and demonstration projects that address the technical, economic, and environmental viability of treating and using brackish groundwater, seawater, impaired waters, or otherwise creating new water supplies within a specific locale.

<http://www.usbr.gov/WaterSMART/awtg/index.html>

- Grants to Develop Climate Analysis Tools – For research projects focused on the information gaps detailed in the joint Reclamation and United States Army Corps of Engineers (USACE) Report titled “*Addressing Climate Change in Long-Term Water Resources Planning and Management: User Needs for Improving Tools and Information*” (Section 3). Projects support the ongoing efforts under 9503(b) of the SECURE Water Act and may help narrow uncertainties, provide information in more usable forms, or develop more robust strategies for incorporating uncertainty into water management decision-making.

<http://www.usbr.gov/WaterSMART/cat/index.html>

Basin Studies Program

The Basin Studies Program is a basin-wide effort to evaluate and address the impacts of climate change.

1. Basin Studies – Funding is available for comprehensive water studies that define options for meeting future water demands in river basins in the western United States where imbalances in water supply and demand exist or are projected. Each study includes four key segments:
 - a. State-of-the-art projections of future supply and demand by river basin.
 - b. An analysis of how the basin’s existing water and power operations and infrastructure will perform in the face of changing water realities.
 - c. Development of options to improve operations and infrastructure to supply adequate water in the future.
 - d. Recommendations on how to optimize operations and infrastructure in a basin to supply adequate water in the future
2. West-Wide Climate Risk Assessments – West-Wide Climate Risk Assessments identify risks to water supplies, demands, and impacts to operations within the eight major river basins: Colorado, Columbia, Klamath, Missouri, Rio Grande, Sacramento, San Joaquin, and Truckee basins.
3. Landscape Conservation Cooperatives (LCCs) - LCCs are partnerships that bring together resource managers and stakeholders for cooperative planning and information sharing to solve regional conservation issues. Reclamation and the Fish and Wildlife Service are co-leading the development of two **Landscape Conservation Cooperatives**, the **SouthernRockies** and the **Desert LCCs**

Reclamation Seeking Partners for WaterSMART Basin Studies

The Bureau of Reclamation is seeking eligible non-federal entities interested in participating in a basin study under the [WaterSMART Program](#). Those entities interested in proposing a Basin Study to Reclamation must submit a letter of interest to their respective Reclamation regional office by March 16, 2011.

Basin studies are comprehensive studies that define options for meeting future water demands in river basins in the western United States where imbalances in supply and demand exist or are projected. Reclamation will work cooperatively with state and local partners to conduct the study.

A Basin Study is comprised of four main elements:

1. Projections of water supply and demand, including the risks of climate change,
2. Analysis of how existing water and power infrastructure and operations will perform in response to changing water realities,
3. Development of options and mitigation strategies to improve operations and infrastructure to supply adequate water in the future, and
4. Trade-off analysis of the options identified, findings and recommendations, as appropriate

Information regarding the risks and impacts of climate change may be developed as part of the basin studies, or may include baseline analyses developed through the West-Wide Climate Risk Assessments, another activity under the WaterSMART Program. The non-federal entities interested in participating in a basin study must contribute at least 50 percent of the total study cost as cash or in-kind services. basin studies are not a financial assistance program; therefore, the Reclamation share of the study costs may only be used to support work done by Reclamation staff or Reclamation contractors.

Proposed letters of interest for basin studies will be reviewed by Reclamation regional office staff. Those selected for further consideration will work with Reclamation technical experts to develop a joint study proposal for evaluation and prioritization by a Reclamation-wide review committee. The committee will develop a group of final recommendations to be considered for funding within existing budget parameters.

To learn more about proposing a basin study or to learn more about the WaterSMART Program, visit www.usbr.gov/WaterSMART/. To determine the Reclamation region in which your specific basin is located, visit www.usbr.gov/main/regions.html/.

<http://www.usbr.gov/WaterSMART/bsp/index.html>

Title XVI – Water Reclamation and Reuse Program

The Reclamation *Water Reclamation and Reuse Program* was authorized by the Reclamation Wastewater and Groundwater Study and Facilities Act of 1992 (Title XVI of Public Law 102-575). Also known as Title XVI, the act directs the Secretary of the Interior to undertake a program to investigate and identify opportunities for water reclamation and reuse. Through the Title XVI Program, Reclamation provides financial and technical assistance for appraisal studies, feasibility studies, research and demonstration projects, and construction projects that reclaim, reuse, or recycle water. Unlike other Reclamation programs, the Title XVI Program provides Reclamation with blanket authorization to participate in planning studies, including appraisal or feasibility investigations, as well as research and demonstration projects. However, Reclamation cannot participate in full-scale construction until Congress provides specific authorization through an amendment to P.L. 102-575. The original act provided construction authorization to five recycling projects. Since then, amendments to P.L. 102-575 have provided construction authorization to about 45 projects in nine states.

For purposes of the Title XVI Program, a water reuse project is a project, including the necessary facilities and features that reclaim and reuse municipal, industrial, domestic, or agricultural wastewater

and naturally impaired groundwater and/or surface water. Consistent with state law, reclaimed water can be used for a variety of purposes including, but not limited to, environmental restoration, fish and wildlife, groundwater recharge, municipal, domestic, industrial, agricultural, power generation, or recreation.

Eligible Recipients

Eligible recipients of Title XVI funding include state, regional or local authorities; Indian tribes or tribal organizations; or other entities such as water conservation or conservancy districts, wastewater districts, rural water districts, and all must be located within the 17 Western States or Hawaii.

<http://www.usbr.gov/WaterSMART/title/index.html>

See Program Brochure for additional information on the Water Reclamation and Reuse Program.

Reclamation Rural Water Supply Program

The Rural Water Supply Program is a new program that Reclamation is developing pursuant to the Rural Water Supply Act of 2006, Public Law 109-451. The act authorized Reclamation to establish a program to work with rural communities, including tribes, throughout the 17 western states to assess potable water supply needs and to identify options to address those needs through appraisal investigations and feasibility studies.

See hand out for additional information on the Rural Water Supply Program.

<http://www.usbr.gov/ruralwater/>

Science and Technology Program – Research and Development

The Science and Technology (S&T) Program is the primary Research and Development (R&D) arm of Reclamation. The R&D Program is a Reclamation-wide competitive, merit-based program that is focused on innovative solutions for Reclamation water and facility managers to assist western water managers and stakeholders. The program has contributed many of the tools and capabilities in use today by Reclamation and western water managers.

Over the past seven years, the R&D Office has funded approximately 800 research projects totaling \$50 Million Dollars that have led to many important tools, solutions, and improvements in the way water and power infrastructure and related resources are managed. Effective partnerships are a primary R&D proposal award consideration. The emphasis is on efficiency and effectiveness through collaborative R&D with stakeholders, universities, non-profit organizations, the private sector, and other federal, state, and local agencies with water and water-related roles and capabilities. Collaborative R&D projects achieve cost-sharing with partners through in-kind services and/or direct funding contributions.

For Fiscal Year 2011 funding, the Reclamation call for proposals targeted projects with a focus on:

1. The spread of invasive Zebra and Quagga Mussels,
2. Potential impacts of climate change on water resources, and
3. Advanced water treatment processes and technologies

However, proposals were considered in all areas affecting Reclamation, including broad categories of:

1. Environmental issues in water delivery/management,
2. Water and power infrastructure reliability,
3. Water operations decision support, and
4. Conserving or expanding water supplies

To learn more about the Reclamation R&D Program, please visit <http://www.usbr.gov/research/science-and-tech/>, the Reclamation S&T Program brochure, a PDF version, that may be downloaded.

To date, three R&D projects have received funding within OTAO:

1. Evaluation of Joint Influences of Climate Change and Land Cover on Water Availability (Fiscal Year 2009 and 2010),
2. Treatment of Variable Water Sources: Adaptations for a Flexible Desalination System (Fiscal Year 2010), and
3. An Analysis of Nano-Filtration Treatment Applications on Recycled and Potable Water Supplies (Fiscal Year 2010).

Drought Program

The Reclamation "Drought Program" was established after Public Law 102-250 was enacted in 1991. The legislation and history of the "Drought Program" and its accomplishments are discussed below.

Applicable Legislation:

- Reclamation States Emergency Drought Relief Act of 1991, Public Law 102-250, 106, Stat. 53, as amended
- 2000 Amendment, P.L. 106-566
- 2006 Re-Authorization, P.L. 109-234
- 2010 Extension of Title I Authorization reads as follows (P.L. 111-212):

The act authorizes emergency response and planning assistance that would minimize and mitigate losses and damages resulting from drought conditions. Eligible recipients are federal, state, tribal, and local entities.

Request for Assistance

The act provides that the programs and authorities established under Title I become operative in any Reclamation state, as follows:

After the Governor(s) of the affected state(s) or the governing body of the affected tribe has requested drought assistance and the Secretary determines that such temporary assistance is merited; or upon the approval of a drought contingency plan as provided in Title II of the Act.

Title I: Assistance During Droughts

Title I allows Reclamation to undertake activities that would minimize or mitigate drought damages or losses within the 17 Reclamation States including tribes within those states, and Hawaii. Any construction activities undertaken shall be limited to temporary facilities, with the exception of well construction.

For the list of entities that are currently eligible to request Title I emergency drought assistance contact a member of the Reclamation staff.

Title II: Drought Contingency Planning

Title II provides for assistance in drought planning. All 50 states and U.S. territories are eligible for Title II planning assistance.

Water Conservation Field Services Program

As the agency created to design and build many of this nation's water projects, and as the largest water wholesaler in the country, water conservation is one of Reclamation's top priorities. Reclamation has undertaken a series of conservation initiatives designed to stretch our water supply to meet additional needs. We believe with the help of water users throughout the west, more efficient water use by everyone will help meet much of the increasing demand for water. In addition, these efforts will result in several other benefits including: reduced costs to the federal government and water users; improved reliability of existing water supplies; reduced drought impacts; improved and protected surface and groundwater quality through the reduction of non-point and point sources of pollution; and energy conservation.

Reclamation has a major responsibility, in partnership with water users, states, and other interested parties, to help improve water resource management and the efficiency of water use in the western United States. With passage of the Reclamation Act of 1902, Reclamation's original challenge was to promote the settlement of the west by providing the necessary infrastructure for the irrigation of small family farms. Extensive tracts of arid and semi-arid lands have become some of the most productive agricultural area and urban centers in the world. And, in addition to irrigation, Reclamation projects provide water for homes and industries, recreation, fish and wildlife, power generation, and flood control. Now, after more than 100 years, Reclamation's primary role has evolved from one of water resource development to one of water resource management. More efficient water use is a key component of Reclamation's water resource management strategy.

Most western lands typically receive far less annual precipitation than that received by eastern and southern states. Early western settlers quickly discovered that survival in this area was extremely difficult because rainfall was neither plentiful nor reliable. The transformation of this dry, barren desert region into productive farmland, and thriving towns and cities began with the construction of facilities to store and transport water.

Today, the many benefits of controlling water in this way are evident in the extensive development that has taken place throughout the west over the past 100 years. Huge cities have been created and millions of people live, work, and recreate in this desert region. But, as the west continues to grow, we must face the problem of continually increasing demands on a finite supply of water. This includes human population needs and the needs of the environment.

Unless highly efficient water usage practices can be developed and maintained in the west, it will not be possible to provide the water needed to sustain western ecosystems as well as economic and population growth. So, how will these increasing and diverse needs be met? By each one of us doing what we can to use water wisely. The responsibility to protect and conserve this vital resource to ensure that a sufficient water supply will continue to exist rests with us all.

Reclamation recognizes that no single entity, acting independently can meet the challenge of improving the efficiency of water use and management throughout the western states. Consequently, a key to meeting this challenge will be the partnerships formed between Reclamation and water users, other federal and state agencies, educational and research institutions, and other interested parties.

Developing a thorough water conservation plan is an opportunity for every water user to identify water management problems, evaluate options, highlight accomplishments, and plan for improvements.

Water Conservation measures can:

1. Improve reliability of existing water supplies,
2. Reduce overall operating costs for water users,
3. Postpone the need for new or expanded water supplies, storage capacity, treatment works, or drainage remediation,
4. Result in higher crop yields,
5. Reduce soil erosion and drainage problems,
6. Reduce the impacts of drought,
7. Under some circumstances, yield conserved water for additional agricultural, urban, or environmental need

<http://www.usbr.gov/waterconservation/>

Current Funding Opportunities

All Reclamation program Funding Opportunity Announcements (FOA) for Grants or Cooperative Agreements to utilize Reclamation funding are posted on the Grants.gov website: <http://www.grants.gov/>

Any interested applicant can view this site and utilize features that will generate E-Mail notices of all postings based on the agency, or any set of parameters, of interest to the applicant. The applicant is provided with the tools to apply for available funding utilizing this website.

Desalination and Water Purification Research and Development (DWPR)

<http://www.usbr.gov/pmts/water/research/DWPR/index.html>

Contact Information

Mark A. Treviño, Area Manager
512.899.4150

James Allard, Deputy Area Manager
405.470.4810

Collins Balcombe, Supervisory Program Coordinator
Planning and Environmental Group
512.899.4162

Matt Warren, Supervisory Civil Engineer
Supervisor of Facility Operations Group
405.470.4830

Jeff Tompkins, Supervisory Natural Resource Specialist
Supervisor of Land Resources Group
405.470.4821

RECLAMATION

Managing Water in the West

RECLAMATION ACTIVITIES IN TEXAS

Oklahoma-Texas Area Office

February, 2012

Summary Information

The Bureau of Reclamation (Reclamation) is a Department of the Interior agency whose mission is to manage, develop, and protect water and related resources in an environmentally and economically sound manner within the 17 western states. The Oklahoma-Texas Area Office (OTAO) has jurisdiction over 11 reservoir projects across Texas, Oklahoma, and Kansas, which together deliver more than 680,000 acre-feet of Municipal and Industrial (M&I) water annually to about 3 million customers, and which also provide fish and wildlife, recreation, and flood control benefits.

Reclamation's OTAO collaborates with state and local water managers on a variety of programs. Through these programs, Reclamation can provide funding and/or bring its expertise to bear in addressing key water resource issues related to changing water supplies, aging infrastructure, rural water systems, drought management, water conservation, water reuse, aquifer recharge, and desalination, to name a few.



Reclamation's Oklahoma-Texas Area Office has offices in both Austin, TX and Oklahoma City, OK.

Reclamation Projects in Texas

- Five projects and reservoirs in the state, three of which are still owned by the Federal government: Canadian River (Sanford Dam), San Angelo (Twin Buttes Dam), Nueces River (Choke Canyon Dam). Title to Palmetto Bend Project and Marshall Ford Project has been transferred to the local non-Federal managing entities.
- Primary purpose is M&I. Twin Buttes also has an irrigation component irrigating over 12 thousand acres.
- Projects include two state parks, one state wildlife management area, one National Wildlife Refuge and one National Recreation Area.
- Between one and two million people visit Reclamation projects in Texas annually.



General Planning Program

Reclamation's General Planning Program provides the avenue through which Reclamation may provide funding and expertise to the state and its project partners on water resources issues, needs, and opportunities.

Innovative Water Technologies

Reclamation's project partners have identified desalination, water reuse, and aquifer storage recovery as important strategies to help meet their future water needs. To help our partners better prepare for the future, Reclamation is assisting the Texas Water Development Board's (TWDB) innovative water technologies on various activities aimed at advancing creative water solutions in Texas. Among other things, Reclamation is currently working with the state to explore the viability of implementing brackish desalination as an emergency drought response strategy.



RO pilot seawater desalination plant near Brownsville, TX.

WaterSMART Program – Challenge Grants

The nation faces many water related challenges including drought, climate change, energy demands, expanding populations and increased environmental needs. Reclamation's WaterSMART (Sustain and Manage America's Resources for Tomorrow) Program aims to leverage federal (up to 50 percent cost-share) and non-federal funds to improve water management, increase energy efficiency in water delivery, facilitate water marketing projects, protect threatened and endangered species, and carry out activities to address potential climate-related impacts on water resources. Eligible entities include irrigation and water districts, river authorities, tribes, states and other entities with water or power delivery authority. To learn more, visit <http://www.usbr.gov/WaterSMART/>. In fiscal year 2011, grant funding opportunities were made available within four project categories:

- **Water and Energy Efficiency:** construction projects that improve conservation and more efficient use of water and energy.
- **System Optimization Reviews:** a broad look at system-wide efficiency focused on improving efficiency and operations of a water delivery system, water district, or water basin. The Review results in a plan of action that focuses on improving efficiency and operations on a regional or basin perspective.
- **Pilot and Demonstration Projects for Advanced Water Treatment:** construction of pilot and demonstration projects that address the technical, economic, and environmental viability of treating and using brackish groundwater, seawater, impaired waters, or otherwise creating new water supplies within a specific locale
- **Research on Development of Climate Analysis Tools:** research activities to develop tools to assess the impacts of climate change on water resources.

Process Overview

- Funding Opportunity Announcements (FOAs) are made on www.grants.gov. The FOAs provide proposal instructions, criteria, and point allocations.
- Reclamation ranks and prioritizes the proposals.
- Reclamation issues a press release and recipients are notified by mail whether their proposal is awarded funding.

Current Status

To date, Reclamation has awarded about \$5.9 million to 23 projects in Texas with a cumulative project cost of \$16.8 million. The estimated total amount of water saved or better managed is about 36,300 acre-feet per year.

In FY 11, Reclamation awarded a total of 54 Water and Energy Efficiency grants, providing \$25 million in Federal funding nationwide; \$1.8 million was awarded to 6 projects in Texas for FY 11. The estimated total amount of water saved for these projects is about 3,000 acre-feet per year with energy savings totaling about 953,000 kilowatt-hours per year.



Installation of a solar powered flow meter and SCADA system, Brownsville Irrigation District, TX.



Replacement of manual gates with Rubicon standard programmable flume gate, Cameron County Irrigation District No. 2, TX.



Replacement of open canal with PVC pipe, Brownsville Irrigation District, TX.



Replacement of manual gates with Rubicon standard programmable flume gate, Cameron County Irrigation District No. 2, TX.



Gate structure in new pipeline, Brownsville Irrigation District, TX.



Wooden manual gate to be replaced with automated gate, Lower Colorado River Authority, Gulf Coast Irrigation Division, TX.

WaterSMART Program - Title XVI Water Reuse and Recycling

This program was authorized by the Reclamation Wastewater and Groundwater Study and Facilities Act of 1992 (Title XVI of Public Law 102-575). Also known as Title XVI, the Act directs the Secretary of the Interior to undertake a program to investigate and identify opportunities for water reclamation and reuse. Through the Title XVI program, Reclamation can provide financial and technical assistance for appraisal studies, feasibility studies, research and demonstration projects, and construction projects that reclaim, reuse, or recycle water. The Federal cost-share of construction projects is generally 25 percent, up to \$20 million. Eligible entities include irrigation and water districts, river authorities, tribes, states and other entities with water or power delivery authority.

Current Status

- 6 projects are active in Texas; the Williamson County Reuse Project is the only project in Texas that is authorized and is under construction.
- \$1.2 million in American Recovery and Reinvestment Act funds was recently awarded to the Williamson County Reuse Project (City of Round Rock) on a project to reuse about 10,000 acre-feet per year of treated effluent for landscape irrigation and other non-potable uses.
- To date, a total of \$3.7 million has been appropriated to Title XVI projects in Texas.

Research and Development (R&D) Program

Reclamation's R&D Program provides technical and financial assistance to internal and external research projects that help Reclamation accomplish its mission of developing water supplies in a sustainable manner.

External Research

External research is funded under Reclamation's *Desalination and Water Purification Water Research Program (DWPR)*. DWPR was established to facilitate partnerships with academia, private industry, and local communities to develop more cost-effective, technologically efficient means by which to desalinate water. The funding process includes a FOA posting on www.grants.gov, an expert internal panel review within Reclamation, and award notification. To learn more, visit

<http://www.usbr.gov/pmts/water/research/DWPR/index.html>

Current Status

- 7 projects were awarded \$1.4 million in FY 2010, 3 of which are in Texas. The first two are administered out of Reclamation's El Paso Field Office.
 - University of TX at El Paso - demonstration of Zero Discharge Desalination technology at Reclamation's Brackish Groundwater National Desalination Research Facility in Alamogordo, NM.
 - University of TX at El Paso - research/laboratory study on high-volume water recovery from silica-saturated Reverse Osmosis (RO) concentrate using a batch-treatment seawater RO system.
 - University of Houston, TX - research/laboratory study on aluminum electrocoagulation and electroflotation pretreatment for microfiltration.



Wastewater reuse pump station, City of Austin, TX.



Reclamation's Brackish Groundwater National Desalination Research Facility, Alamogordo, NM



Reclamation's Water Quality Improvement Center (WQIC), a desalination R&D facility which evaluates technology for potential use at the Yuma Desalting Plant in AZ.



Reclamation's Expeditionary Unit Water Purifier providing ultrafiltration pretreatment and reverse osmosis desalination of up to 72,000 gpd to a medical center in Biloxi, MS after Hurricane Katrina.

R&D Program Cont.

Internal Research

Internal research is funded under Reclamation's *Science and Technology (S&T) Program*. Through S&T, Reclamation can investigate new and innovative solutions on important issues where there may be a unique or unknown risk and for which capital investment may not occur otherwise. Research can address any number of topics related to water and power infrastructure reliability; water operations; conserving or expanding water supplies; and water-related environmental issues. Recent research priorities have focused on addressing challenges associated with climate change, invasive zebra/quagga mussels, and advanced water treatment. Over the last 7 years, the R&D program has awarded over \$50 million to more than 800 research projects. To learn more, visit <http://www.usbr.gov/research/science-and-tech/>



Naval Facilities Engineering Service Center, CA. Through the Affordable Desalination Collaboration, Reclamation is providing assistance on ways to reduce energy usage for both brackish and seawater desalination systems

Current Status

To date, about \$400,000 has been awarded to 4 projects in Texas:

- FY 2010 - A partnership with the TWDB and Oklahoma Water Resources Board on a study to evaluate the influence of changes in climate and land cover on water availability in Texas and Oklahoma Reservoirs.
- FY 2010/2011 - A partnership with TWDB, San Patricio Municipal Water District, Brownsville Public Utility Board, and Singapore Public Utility Board in the development of a pilot treatment system to desalt highly variable sources of water.
- FY 2011 - A partnership with TWDB, CPS Energy, San Antonio Water System, and Dallas Water Utilities on a study evaluating applications of nanofiltration treatment technology for water reuse.
- FY 2012 - An innovative wetlands design to treat organic compounds and emerging contaminants in reclaimed water.



RO energy recovery unit (orange), Naval Facilities Engineering Service Center, CA.

Lower Rio Grande Valley Water Conservation Program

The Lower Rio Grande Valley Water Resources Conservation and Improvement Act of 2000 (P.L. 106-576) authorized Reclamation to investigate and identify opportunities to improve the water supply for selected counties in Texas along the U.S. - Mexico border. The act and its amendment authorized the construction of 19 water conservation and efficiency projects with a 50/50 cost-share.

Current Status

- 9 projects are physically complete and under operation.
- To date, about \$19.3 million in Federal funds has been made available to projects.
- When all authorized projects have been constructed, they are expected to result in an annual savings of over:
 - 80,100 acre-feet of water;
 - 7.4 million kilowatt-hours of energy; and
 - \$775,000 of operation and maintenance expense.



New pump station installation, Cameron County Irrigation District No. 2

If you have questions or wish to learn more about these programs, please contact your local Reclamation office at:

Oklahoma-Texas Area
Office of the Area Manager
5316 Hwy 290 W. Ste 510
Austin, Texas 78735
512.899.4150
512.899.4179 (fax)

RECLAMATION

Managing Water in the West

Water Reclamation and Reuse

Title XVI Program

Oklahoma-Texas Area Office (OTAO)

February 2012

PROGRAM SCOPE

The Bureau of Reclamation's (Reclamation) water reclamation and reuse program was authorized by the Reclamation Wastewater and Groundwater Study and Facilities Act of 1992 (Title XVI of Public Law 102-575). Also known as Title XVI, the Act directs the Secretary of the Interior to undertake a program to investigate and identify opportunities for water reclamation and reuse. Through the Title XVI program, Reclamation provides financial and technical assistance for appraisal studies, feasibility studies, research and demonstration projects, and construction projects that reclaim, reuse, or recycle water. Unlike other Reclamation programs, the Title XVI program provides Reclamation with blanket authorization to participate in planning studies, including appraisal or feasibility investigations, as well as research and demonstration projects. However, Reclamation cannot participate in full-scale construction until Congress provides specific authorization through an amendment to P.L. 102-575. The original Act provided construction authorization to five recycling projects. Since then, amendments to P.L. 102-575 have provided construction authorization to about 45 projects in nine states, one of which is in OTAO.

For purposes of the Title XVI Program, a water reuse project is a project (including the necessary facilities and features) that reclaims and reuses municipal, industrial, domestic, or agricultural wastewater and naturally impaired groundwater and/or surface waters. Consistent with State law, reclaimed water can be used for a variety of purposes including, but not limited to, environmental restoration, fish and wildlife, groundwater recharge, municipal, domestic, industrial, agricultural, power generation, or recreation.

Eligible Recipients

Eligible recipients of Title XVI funding include State, regional, or local authorities; Indian tribes or tribal organizations; or other entities such as water conservation or conservancy districts, wastewater districts, rural water districts, and all must be located within the 17 Western States or Hawaii.

Program Requirements

Funds for construction projects cannot be disbursed until a Title XVI project receives specific Congressional authorization and all Title XVI pre-construction requirements have been met for that project. These include: (1) completed appraisal and feasibility studies that meet the requirements of Title XVI; (2) completed compliance with the National Environmental Policy Act; (3) an approved determination of financial capability; and (4) an executed cost-share agreement for financial assistance. Project sponsors may carry out or select a third party contractor to conduct planning and environmental compliance activities, or Reclamation may perform these services at the request of the sponsor. However, the construction ownership, operations, and maintenance of a Title XVI project are the sole responsibility of the project sponsor.

Appraisal Studies

An appraisal study may be carried out at the discretion of the project sponsor depending on the status of planning activities. If conducted, an appraisal study considers all potential uses for reclaimed water, methods to increase demand, required permitting, and the current status of water reclamation technology and opportunities for developing improved technologies. The appraisal study will be used to determine if conducting a feasibility study is warranted.

Feasibility Studies

A feasibility study must be conducted in order to receive Federal assistance on a construction project. A feasibility study leads to a decision on whether or not to implement a Title XVI project. Title XVI has specific requirements for the content of the feasibility report. These requirements are identified in the Reclamation's Directive and Standard WTR 11-01, *Water Reclamation and Reuse Program Feasibility Study Review Process*.

Construction Projects

A construction project represents the on-the-ground construction of a planned full-scale Title XVI treatment system, conveyance system or other permanent facility. A construction project is only eligible for funding after it is specifically authorized, environmental compliance is complete, financial capability is demonstrated, and a cost share agreement has been executed.

Research and Demonstration Projects

A demonstration project is a smaller version of a full-scale facility that is sized appropriately to demonstrate the application of a new and innovative technology. Demonstration projects also can establish the feasibility of recycling water to local institutions when an unproven technology is employed. Sponsors should contact OTA0 for information on requirements for demonstration projects.

PROGRAM COST-SHARES

The Title XVI program places different cost-share limitations on planning activities, construction projects, and research and demonstration projects (Table 1).

Table 1. Cost-share amounts authorized under the Title XVI Program

	Federal Share	Non-Federal Share	Special Provisions
Appraisal Studies	100%	-	
Feasibility Studies	50%	50%	\$20 million total project cap (in general)
Construction Projects	25%	75%	
Research and Demonstration Projects	25%*	75%	

* 50/50 cost-share with approval

Table 2. Title XVI Projects in the Oklahoma-Texas Area Office

PROJECT	SPONSOR	PROJECT DESCRIPTION
1 Brownsville Water Recycling Project	Brownsville Public Utilities Board, TX	Direct non-potable reuse: development of a water reuse
2 Brownsville Brackish Desalination Project	Southmost Regional Water Authority, TX	Addition of 7.5 mgd phase II to existing brackish ground
3 Brownsville Seawater Desalination Demo Project	Brownsville Public Utilities Board, TX	2.5 mgd seawater desalination demonstration project a
4 Leon Creek/Mitchell Lake Water Reuse Project	San Antonio Water System, TX	Expansion of distribution system and storage of recycle
5 Brackish Groundwater Desalination Program	San Antonio Water System, TX	25 mgd brackish desalination facility and associated inf
6 Kyle Water Recycling Project	City of Kyle, TX	Direct non-potable reuse infrastructure to convey treat
7 Austin Wastewater Reclamation and Reuse Project	Austin Water Utility, TX	Direct non-potable reuse: infrastructure to convey up to
8 Williamson County Water Recycling Project	Round Rock, Georgetown, Leander, Cedar Park, TX	Direct non-potable reuse: Round Rock to construct infr
9 Central Texas Water Recycling and Reuse: Flat Creek Project	City of Waco, TX	Direct non-potable reuse: 1.5 mgd storage tank, pump to the Waco Industrial District
10 Dallas Trinity River Recycled Water Project	Dallas Water Utilities, TX	Direct non-potable reuse: infrastructure to convey up to downtown area
11 Central Oklahoma Water Reuse Project	Central Oklahoma Master Conservancy District	Evaluation of either a direct non-potable or indirect pot

PROGRAM PROCESS

A Title XVI construction project may be eligible for Federal funding by following a process (Figure 1) that ensures compliance with all Title XVI program requirements. This process allows for some flexibility depending on the specific situation for each project. Interested sponsors should contact OTAO for detailed information regarding the process to implement their project.

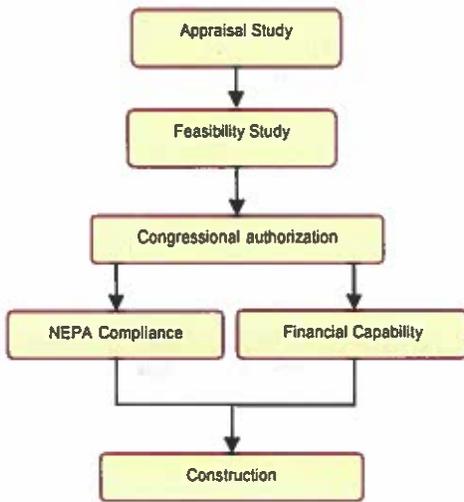


Figure 1. General process and requirements for construction projects under Reclamation's Title XVI program.

TITLE XVI ACTIVITIES IN OTAO

Participation in Title XVI activities in OTAO has been dynamic and complex. To date, twelve projects have been at various stages of project planning, six of which are active (Figure 2; Table 2).

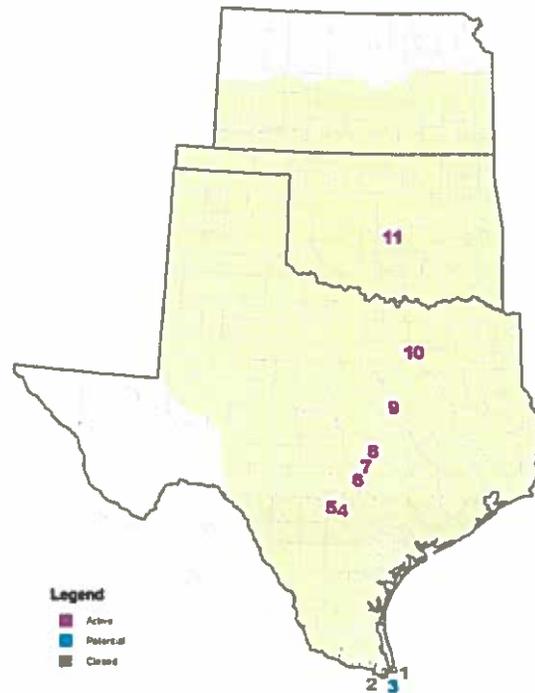


Figure 2. Location and status of Title XVI activities in the Oklahoma-Texas Area Office

	STATUS		
	Appraisal	Feasibility	Construction
Water distribution system.	Completed: FY 02	Closed: FY 06	Authorized: NO
Wastewater desalination treatment plant.	Completed: FY 02	Closed: FY 06	Authorized: NO
Water along the Gulf of Mexico		Potential: unknown	Authorized: N/A
Recycled water	Completed: FY 03	Completed: FY 04	Authorized: NO
Infrastructure - Bexar County		Completed: FY 11	Authorized: NO
Recycled effluent for irrigation purposes		Initiated: FY 11	Authorized: NO
20 mgd of recycled water for landscape irrigation throughout Austin	Completed: FY 04	Completed: FY 10	Authorized: NO
Infrastructure to convey up to 10 mgd of recycled water to service Old	Completed: FY03	Completed: FY 10	Authorized: YES
Station, 17,000 linear feet of pipeline to deliver 3.0 mgd of recycled water		Completed: FY 10	Authorized: NO
18 mgd of recycled water to the Trinity River Corridor Project and	Completed: FY 10	Initiated: FY 13	Authorized: NO
Water reuse project to service Norman, Midwest City, and Del City.		Initiated: FY 10	Authorized: NO

PROGRAM FUNDING

To date, OTA0 has received over **\$3.76 million** in funding to participate in the Title XVI Program (Table 3). This includes **\$216,000** in **FY 11 grants** awarded to two feasibility studies under the WaterSMART Program.

The Department of the Interior's WaterSMART Program included **\$32 million** funding in **FY 11 and FY 12** for competitive grants for Title XVI feasibility studies and for authorized construction projects. Funding opportunities for these and other grants are posted on www.grants.gov. Sponsors are encouraged to contact OTA0 for information on Title XVI program funding opportunities.

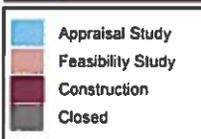
CONTACT INFORMATION

Mark A. Treviño
 Area Manager
 U.S. Bureau of Reclamation
 Oklahoma-Texas Area Office
 5316 Hwy 290 West, Ste. 510
 Austin, Texas 78735-8931
 (512) 899-4150
mtrevino@usbr.gov

Collins K. Balcombe
 Title XVI Program Coordinator
 U.S. Bureau of Reclamation
 Oklahoma-Texas Area Office
 5316 Hwy 290 West, Ste. 510
 Austin, Texas 78735-8931
 (512) 899-4162
cbalcombe@usbr.gov

Table 3. Federal appropriation amounts (x 1,000) by Fiscal Year (FY) for Title XVI projects in the Oklahoma-Texas Area Office

Project	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Total
1 Brownsville Water Recycling	46													46
2 Brownsville Brackish Desalination	46													46
3 Brownsville Seawater Desalination														0
4 SAWS Leon Creek/Mitchell Lake				354										354
5 SAWS Brackish Desalination Facility														0
6 City of Kyle Water Recycling Project											66			66
7 Austin Wastewater Reclamation			222											222
8 Williamson County Recycled Water Project						96		246	600	1,228				2170
9 Central Texas Reuse: Flat Creek														0
10 Dallas Trinity River Recycled Water Project						96		492						588
11 Central Oklahoma Water Reuse									121		150			271
Totals	92	222	354	192	738	721	1228	216	3,763					



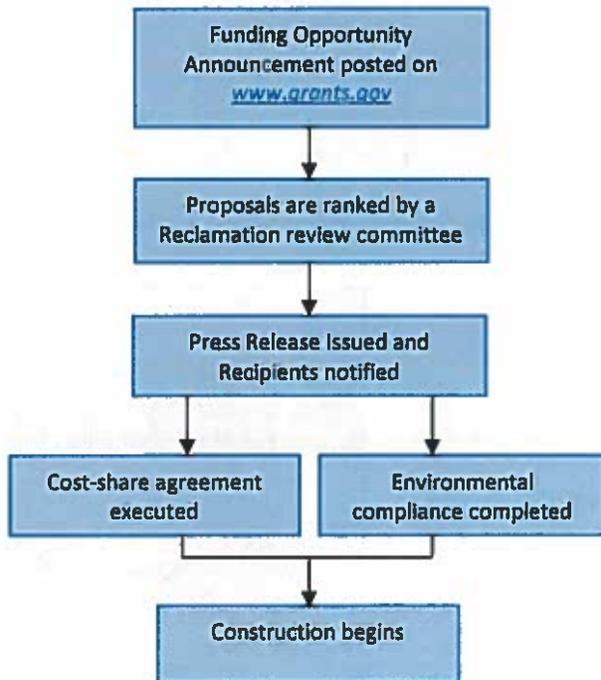
A summary of eligibility and cost-share requirements within each of the four funding categories is provide in Table 1.

Table 1. FY 2011 WaterSMART Grant Categories

Grant Type	Eligible Applicants	Federal Cost-Share	Federal Funding Amount (Per Project)	Amount Available
Water and Energy	Entities with water or power delivery authority in the 17 Western U.S.	Up to 50%	Up to \$1 million	\$24.9 million
Advanced Water Treatment Pilot/Demo	Entities with water or power delivery authority in the 17 Western U.S.	Up to 50%	Up to \$600,000	\$2 million
System Optimization Review (SOR)	Entities with water or power delivery authority in the 17 Western U.S.	Up to 50%	Up to \$300,000	\$1 million
Climate Analysis	Universities, non-profits, entities with water or power delivery authority in the 17 Western U.S.	Up to 50%	Up to \$200,000	\$1 million

Funding Process Overview

The WaterSMART funding award process is illustrated in the Figure 1 below.



Installation of a solar powered flow meter and SCADA system, Brownsville Irrigation District, TX.



Replacement of open canal with PVC pipe, Brownsville Irrigation District, TX.

Figure 1. WaterSMART grants funding award process

Program Status

Since 2004, Reclamation has leveraged \$117 million in Federal funds with \$280 million in non-Federal funds to implement 289 projects West-wide. This includes \$40 million which was made available under the American Recovery and Reinvestment Act of 2009. Overall, these projects are estimated to save about 800,000 acre-feet per year of water and 15 million kwh per year of energy. Within OTAO, a total of 25 projects have received funding since 2004, with water and energy savings estimated to be 46,400 acre-feet and 1.3 million kwh per year, respectively. Table 2 below highlights the projects funded over the last two years. Recent activity has focused on areas along the U.S./Mexico border in South Texas.

Table 2. Summary of OTAO projects that were selected for WaterSMART grant funding in FY 10 and FY 11*.

No.	Recipient	Scope	Award Date (FY)	Federal Share (\$)	Total Cost (\$)	Water Saved (ac-ft/yr)	Energy Saved (kwh/yr)
1	Adams Garden ID, TX	Natural gas and wind powered pumps	2011	300,000	600,000	590	7,433
2	Edwards Aquifer Authority, TX	Replacement of plumbing fixtures, graywater and rainwater collection systems	2011	300,000	757,000	692	790,000
3	Hidalgo County ID #2, TX	Automated gates/solar powered SCADA	2011	300,000	1,319,594	895	128,000
4	Delta Lake ID, TX	Conversion of open canal to pipeline	2011	296,446	599,532	343	13,000
5	Hidalgo County ID #3, TX	Conversion of mortar joint to PVC pipe	2011	286,794	573,589	244	7,800
6	Cameron County ID #2, TX	Conversion of open canal to pipeline	2011	286,265	577,030	171	6,655
7	Hidalgo County ID #6, TX	Canal lining and rehabilitation	2010	300,000	653,525	905	164,428
8	Laguna Madre Water District, TX	Direct, nonpotable water reuse	2010	300,000	2,014,265	336	19,827
9	Lower Colorado River Authority, TX	Gulf Coast Irrigation Division gate rehabilitation	2010	256,296	557,166	2,560	132,368
10	Brownsville ID, TX	Conveyance system improvements	2010	300,000	678,026	160	5,248
11	Harlingen Water Works, TX	Direct, nonpotable water reuse	2010	142,425	284,251	1,120	0
12	Harlingen Irrigation District, TX	System Optimization Review - measuring past water conservation improvements to prioritize future projects.	2010	73,022	150,887	n/a	n/a
13	University of Texas at Austin	Climate analysis on drought in the High Plains Ogallala Aquifer	2010	199,999	399,999	n/a	n/a
14	Oklahoma Water Resources Board, OK	Climate analysis on water resources planning	2010	84,647	174,293	n/a	n/a
Total				3,425,894	9,339,157	8,016	1,274,759

* FY 11 selections were made but awards are not final. Financial assistance agreements are under development.

Frequent Asked Questions

Q. What type of information is contained within a WaterSMART grant FOA?

A. The FOA provides specific scoping requirements, detailed proposal instructions, ranking criteria, and point allocations.

Q. When are FOA's posted on www.grants.gov?

A. FOA's for each grant are posted once per year and can be posted at any time throughout the year (depending on the budget cycle).

Q. Can I be notified when a FOA is posted online?

A. Yes. To receive notification of new WaterSMART FOAs, simply send a blank email to join-waterSMARTgrants@listserver.usbr.gov.

Q. Does Reclamation own and operate the project after I receive a WaterSMART grant?

A: No. The project sponsor retains all ownership and O&M responsibilities for the project.

Q. What is the role of Reclamation once the field work starts?

A: Reclamation verifies that the project is being implemented consistent with what was proposed. Minor changes in scope and schedule are acceptable.

Q. How soon must my project be completed once I receive a grant?

A. Projects generally must be completed within two years.

Q. How much money is in the FY 12 budget for WaterSMART grants?

A: Reclamation requested \$18.5 million in the President's FY 12 budget for WaterSMART grants. However, the House/Senate mark-ups have not been completed and the FY 12 budget is not final.



Using wetlands to treat wastewater effluent, Harlingen Water Works, TX.



Water reuse and manhole lining project, Laguna Madre Water District, TX.



Replacement of manual gates with Rubicon standard programmable flume gate, Cameron County Irrigation District No. 2, TX.



Canal lining project, Hidalgo County ID No. 6, TX.

If you have questions or wish to learn more about specific WaterSMART opportunities, please contact your local Reclamation office at:

Oklahoma-Texas Area Office

5316 Hwy 290 W, Suite 110

Austin, TX 78735-8931

512.899.4150

512.899.4179

RECLAMATION
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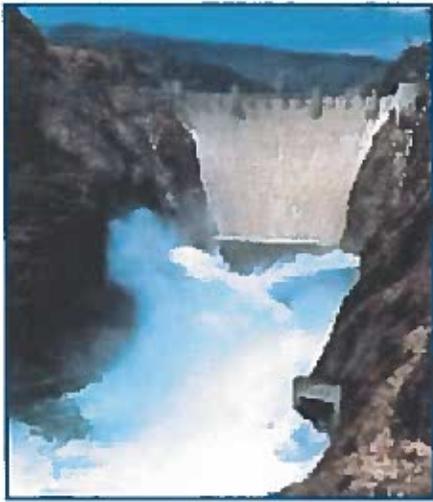
Bureau of Reclamation Science and Technology Program



U.S. Department of the Interior
Bureau of Reclamation

August 2005

Pursuing Innovative Solutions for Water in the West Through Collaborative R&D



Hoover Dam

The Science and Technology (S&T) Program is the primary Research and Development (R&D) arm of Reclamation.

The S&T Program is a Reclamation-wide competitive, merit-based applied R&D program that is focused on innovative solutions for Reclamation water and facility managers, and our western water stakeholders. The program has contributed many of the tools and capabilities in use today by Reclamation and western water managers.

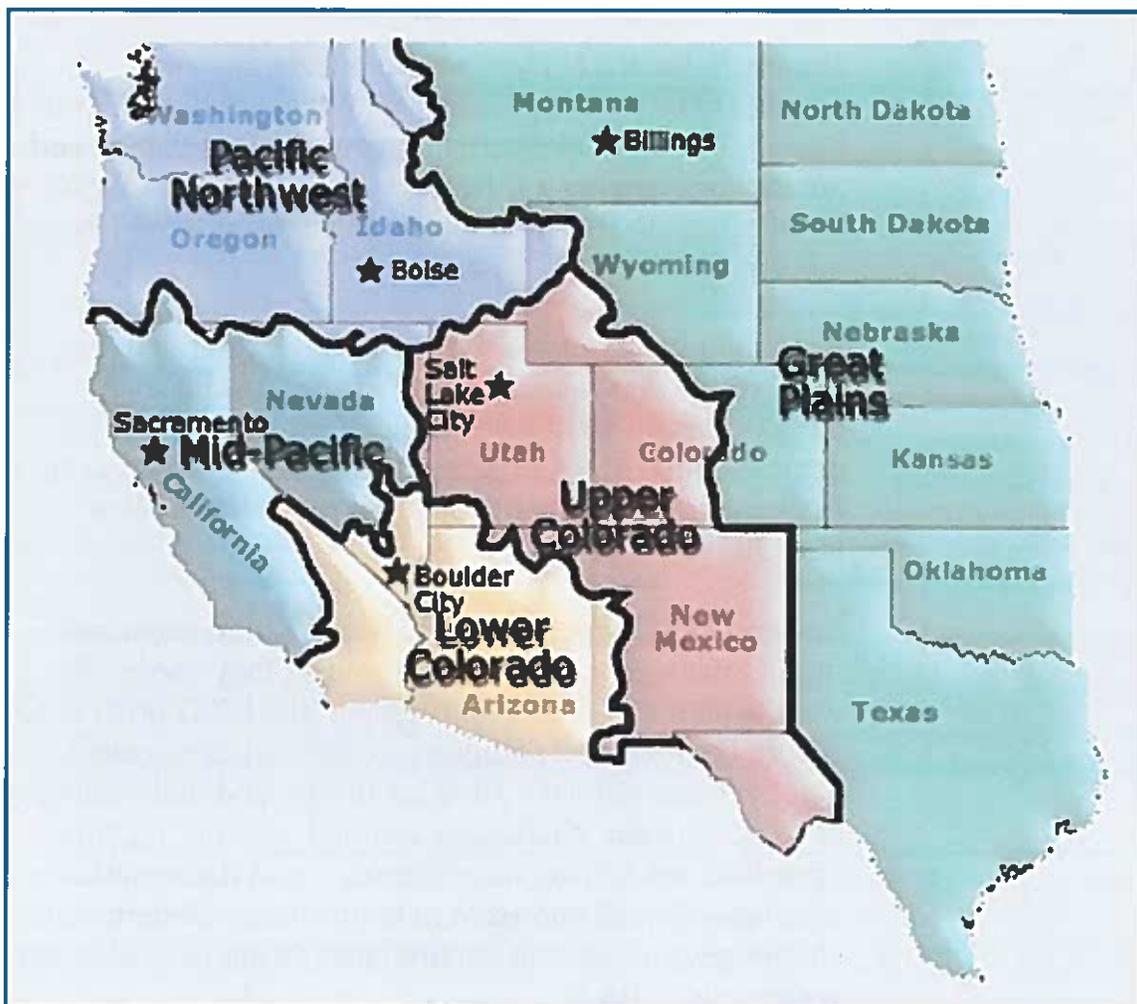
About Reclamation - Established in 1902, the Bureau of Reclamation is best known for the dams, powerplants, and canals it constructed in the 17 western states. These water projects led to homesteading and promoted the economic development of the West. Reclamation has constructed more than 600 dams and reservoirs including Hoover Dam on the Colorado River and Grand Coulee on the Columbia River.

Today, we are the largest wholesaler of water in the country. We bring water to more than 31 million people, and provide one out of five Western farmers (140,000) with irrigation water for 10 million acres of farmland that produce 60% of the nation's vegetables and 25% of its fruits and nuts.

Reclamation is also the second largest producer of hydroelectric power in the western United States. Our 58 powerplants annually provide more than 40 billion kilowatt hours generating nearly a billion dollars in power revenues and produce enough electricity to serve 6 million homes.

Bureau of Reclamation Regions

Today, Reclamation is a contemporary water management agency that helps the Western States, Native American Tribes, and others meet new water needs and balance the multitude of competing uses of water in the West. Our mission is to assist in meeting the increasing water demands of the West while protecting the environment and the public's investment in these structures. We place great emphasis on fulfilling our water delivery obligations, water conservation, improving water supply flexibility, and developing partnerships with our customers, states, and Indian Tribes, and in finding ways to bring together the variety of interests to address the competing needs for our limited water resources. Learn more about Reclamation at <http://www.usbr.gov/main/about/>



R&D Partnership Opportunities

“Great discoveries and achievements invariably involve the cooperation of many minds”-Anonymous

Reclamation employees are the principle investigators eligible to submit R&D proposals and receive proposal awards. Effective partnerships are a primary R&D proposal award consideration. We emphasize efficiency and effectiveness through collaborative R&D with stakeholders, universities, non-profit organizations, the private sector, and other local, state, and federal agencies with water and water-related roles and capabilities. Collaboratively developed solutions meet the greatest number of needs at the least cost to all partnership members, and in the least amount of time than any partner can do on their own. Collaborative R&D projects achieve cost-share from R&D project partners through in-kind services and/or direct funding contributions.

Unparalleled R&D Opportunity - Looking for opportunities to work directly with the end-user of your R&D? Want to make sure that your R&D is valued and put to work making a difference for water in the West? Want access to Reclamation's unique, extensive *“living laboratories?”*

Reclamation's extensive water storage, water delivery, and hydropower facilities offer unsurpassed living laboratories for field tests, evaluations, and demonstrations. R&D partnerships also have access to Reclamation's hydraulic, material testing, and other laboratories.

The end users of our R&D are Reclamation water and facility managers and the stakeholders they serve. We work with our end-users throughout the R&D process to ensure the tools and solutions we develop are needed, practical, and valued. Their on-the-ground understanding of Western water challenges coupled with our technical expertise, our *“living laboratories,”* and Reclamation's solution-oriented approach to confronting Western water challenges provides an unparalleled forum for water and water-related R&D.

Partnership Tools

Department of the Interior Partnership Guidance - The Department of the Interior believes that developing partnerships is a very important way to effectively accomplish its various missions of managing, conserving, and protecting America's natural, cultural, and historic resources. As such, working with partnerships is central to the Secretary's 4 C's....“Conservation through Cooperation, Communication, and Consultation.” The Department of the Interior has issued a Partnership Legal Primer to help guide the development of effective and appropriate partnerships. Learn more about partnerships with the Department of the Interior at <http://www.doi.gov/partnerships/>. Learn more about the Department's *Partnership Legal Primer* at http://www.doi.gov/partnerships/partnership_legal_framework.html

Federal R&D Partnership Legislation - Federal Technology Transfer legislation enables federal agencies to make their R&D facilities and expertise available to the private sector through cooperative research. Technology advancements achieved are transferred to private industry for commercialization. Federal Technology Transfer legislation enables



federal agencies, the private sector, and other non-federal entities to join forces so that:

- U.S. industries have easy access to federal R&D expertise and facilities.
- Federal agencies have access to private sector expertise and resources that complement their agency mission-driven R&D.
- U.S. industries remain more competitive in the global marketplace through technology innovation which helps create jobs, strengthen our national economy, and reduce the nation's foreign trade deficit.
- Industry can license Reclamation intellectual property, or intellectual property that is jointly developed through collaborative R&D. This helps to mature federal innovations for deployment, so that they can be manufactured and broadly available to benefit the public.

Partnership Agreements - Cooperative Research and Development Agreements (CRADAs) are authorized under Federal Technology Transfer legislation. CRADA's define the R&D partnership between the federal government and non-federal entity. Non-federal cooperating entities are authorized to provide an array of resources for developing and commercializing a new product, service, or solution. Non-federal cost-share can include personnel, equipment, materials, or funds to cover any additional cost of Reclamation expertise and facility use. Federal cost share can only include personnel, facilities, equipment, and materials. No federal funds can be transferred to a cooperating entity through a CRADA. Reclamation will enter into a CRADA only when the partnership offers complementary capabilities and interest, but the R&D results need to be relevant and useful to supporting Reclamation's mission of water and power deliveries.

Reclamation's R&D Agenda

Improving Water Delivery Reliability R&D Focus Area

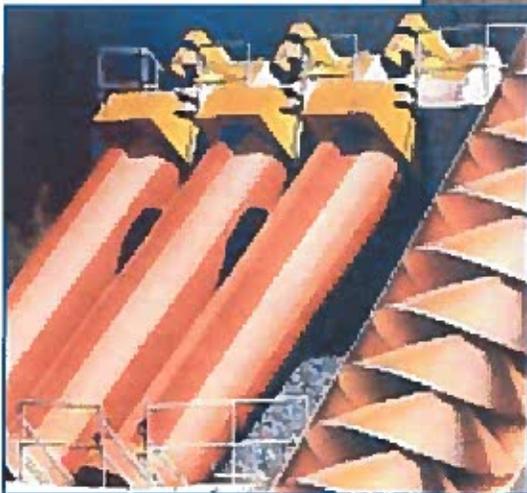
Improve the reliability of Reclamation water deliveries by producing effective solutions, tools, and practices that Reclamation water managers can use to prevent water conflicts with the environmental demands on water supplies. Improvements and technological advances are pursued in the following R&D Output Areas:

- Fish Passage and Entrainment
- Ecosystem Needs
- Aquatic and Riparian Invasive Species
- River and Reservoir Restoration and Sediment Management



Concrete Flume and Baffle Fishway

Expanding critical fish habitat through fishways that allow safe passage around diversion dams



Archimedes Screw Pump designed for safe fish passage

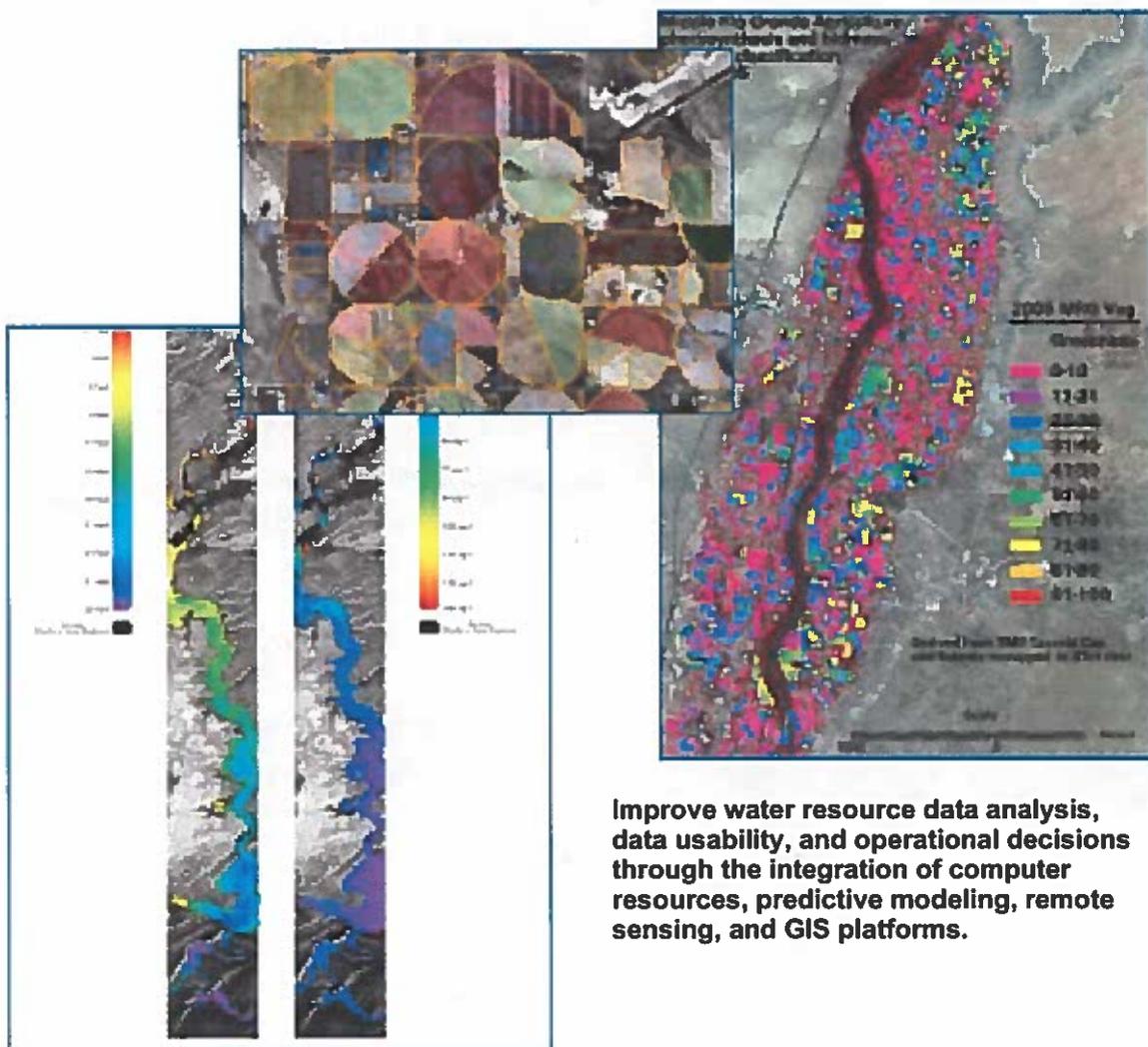


Reclamation's R&D Agenda

Improving Water Operations Decision Support R&D Focus Area

Develop solutions and tools that help Reclamation water managers make effective reservoir and river system operational and planning decisions through better integration, evaluation, understanding, and presentation of critical data and information. Improvements and technological advances are pursued in the following R&D Output Areas:

- Managing Hydrologic Events
- Water Supply Forecasting
- Water Operation Models and Decision Support Systems
- Water Resource Data Analysis



Reclamation's R&D Agenda

Improving Water and Power Infrastructure Reliability and Safety R&D Focus Area

Improve the reliability of Reclamation water storage, water delivery, and hydropower facilities by producing or advancing effective solutions, tools, and practices that Reclamation facility managers use to maintain, modernize, and extend the life of Reclamation's aging infrastructure. Improvements and technological advances are pursued in the following R&D Output Areas:

- Structural Condition Assessment and Performance Monitoring
- Repair and Maintenance
- Public and Employee Safety
- HydroPower Generation



The S&T Program partnered with Woodward Governor to fund the development of digital governor algorithms specifically tailored for hydro generators.



Our "Guide to Concrete"
is considered an industry
standard

Reclamation's R&D Agenda

Advancing Water Supply Technologies R&D Focus Area

Enhance water supplies for Reclamation stakeholders with new technologies, solutions, and practices that expand, liberate, or conserve water supplies. Improvements and technological advances are pursued in the following R&D Output Areas:

- Conjunctive Groundwater Storage and Use
- Desalination and Water Treatment
- Agriculture Water Efficiency
- Institutional Approaches to Water Solutions
- Helping Irrigation Districts Cope with Change
- Reducing System Water Losses and Other Conservation Practices



Canal lining innovations help conserve significant amounts of water.

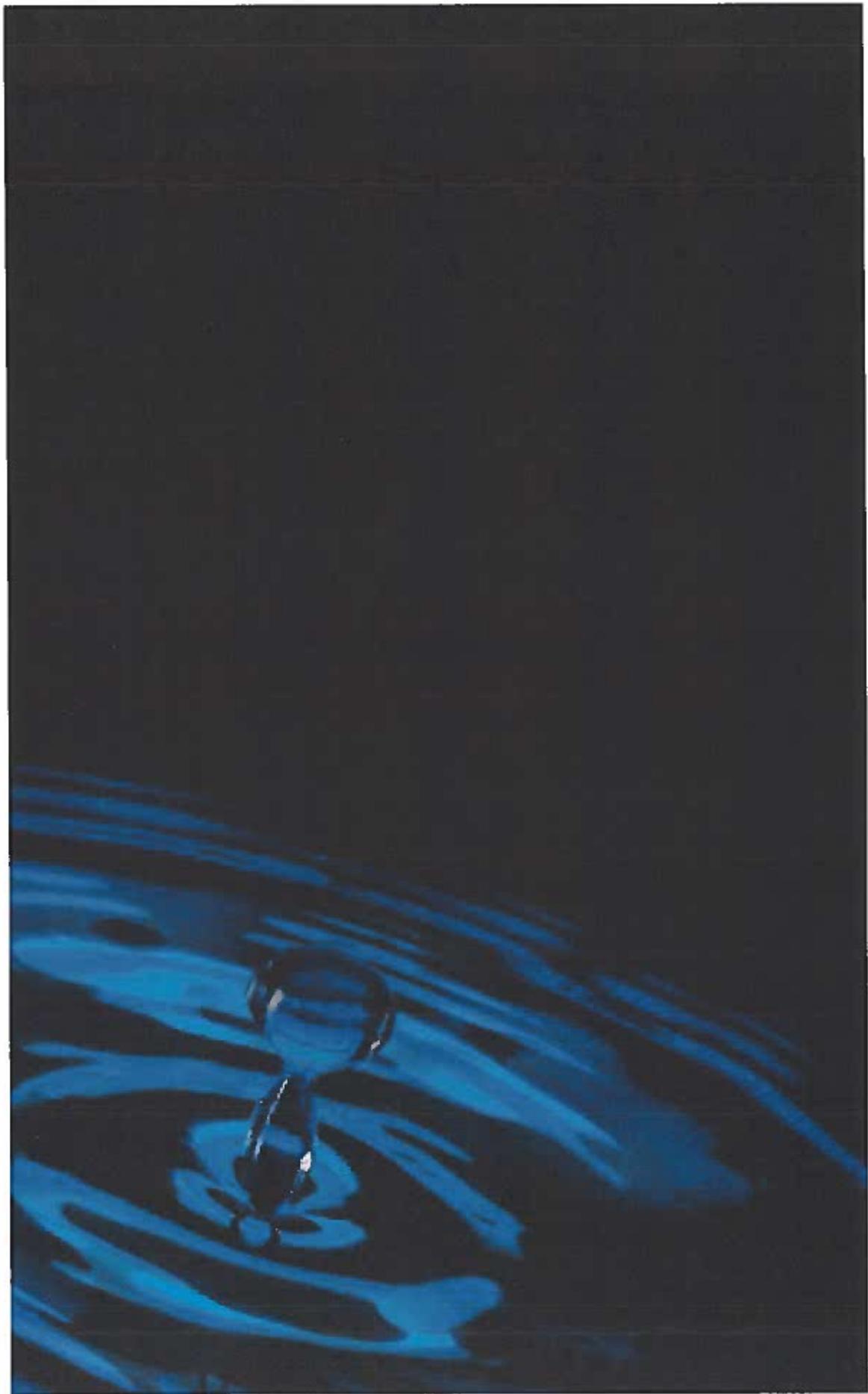


Innovative techniques in canal automation and remote telemetry can conserve water by decreasing diversions by 20% while increasing crop production.

Reclamation R&D Contacts

Maryanne Bach
Director, Research and Development
303-445-2132
mbach@do.usbr.gov

Chuck Hennig
Research Coordinator
303-445-2134
chennig@do.usbr.gov



RECLAMATION

Managing Water in the West

RESEARCH & DEVELOPMENT ACTIVITIES IN TEXAS

Oklahoma-Texas Area Office

Summary Information

The Bureau of Reclamation (Reclamation) is a Department of the Interior agency whose mission is to manage, develop, and protect water and related resources in an environmentally and economically sound manner within the 17 western states. The Oklahoma-Texas Area Office (OTAO) has jurisdiction over 11 reservoir projects across Texas, Oklahoma, and Kansas, which together deliver more than 680,000 acre-feet of Municipal and Industrial (M&I) water annually to about 3 million customers, and which also provide fish and wildlife, recreation, and flood control benefits.

Reclamation's OTAO collaborates with state and local water managers on a variety of programs. Through these programs, Reclamation can provide funding and/or bring its expertise to bear in addressing key water resource issues related to changing water supplies, aging infrastructure, rural water systems, drought management, water conservation, water reuse, aquifer recharge, and desalination, to name a few.

Research and Development (R&D) Program

Reclamation's R&D Program provides technical and financial assistance to internal and external research projects that help Reclamation accomplish its mission of developing water supplies in a sustainable manner.

Reclamation is particularly interested in research where the benefits are widespread but where no private-sector entities are willing to make the investment and assume the risks.

Reclamation is also interested in research that would have a national significance – where the issues are of large-scale concern and the benefits accrue to a large sector of the public. The two main subgroups of this program are the Science and Technology Program, which covers all internal research projects, and the Desalination and Water Purification Program, which covers all external research projects. R&D emphasize efficiency and effectiveness through collaborative projects with stakeholders, universities, non-profit organizations, the private sector, and other local, state, and federal agencies with water and water-related roles and capabilities.



Reclamation's Oklahoma-Texas Area Office has offices in both Austin, TX and Oklahoma City, OK.



The El Paso Solar Pond is a research, development, and demonstration project operated by the University of Texas at El Paso and funded by the Bureau of Reclamation and the State of Texas since 1983.



In order to reduce energy requirements and obtain efficiency in the recovery of thermal energy, multi-effect, multi-stage distillation (MEMS) technology has been developed. Thermal Desalination Using MEMS & Salinity-Gradient Solar Pond Technology, University of Texas at El Paso; El Paso, TX

Desalination & Water Purification Water Research Program External Research

External research is funded under Reclamation's *Desalination and Water Purification Water Research Program (DWPR)*. DWPR was established to facilitate partnerships with academia, private industry, and local communities to develop more cost-effective, technologically efficient means by which to desalinate water. The DWPR includes research in three categories: Research and Laboratory Studies, Pilot Scale Projects, and Demonstration Scale Projects.

R&D emphasis is placed on inland brackish waters with the priorities of lowering desalination costs, understanding environmental impacts, reducing energy consumption, and finding more effective ways to manage concentrate.

DWPR's goal is to reduce the costs and environmental impacts of treating impaired waters. DWPR leverage investments from other federal and non-federal entities to facilitate the advancement and deployment of new technologies. The DWPR program is focused on funding \$986,000 in fiscal year 2012 to support external research in desalination technologies that benefit the Nation which includes the award of competitive, merit-based, cooperative agreements.

The funding process includes a FOA posting on www.grants.gov, an expert internal panel review within Reclamation, and award notification. Eligible applicants include: individuals, institutions of higher education, commercial or industrial organizations, private entities, public entities (including state and local), and Indian Tribal Governments.

Current Status

- 7 projects were awarded \$1.4 million in FY 2010, 3 of which are in Texas. The first two are administered out of Reclamation's El Paso Field Office.
- Since the DWPR Program was authorized by Congress under the Water Desalination Act of 1996, Texas projects have been awarded over \$1.8 million.



Microfiltration Unit. Salinity and TOC Removal Using Nanofiltration, University of Texas at El Paso; El Paso TX



Nanofiltration Unit. Salinity and TOC Removal Using Nanofiltration, University of Texas at El Paso; El Paso TX

No.	Report (Agreement) Title Report Date Agreement Number	Award Date (FY)	No.	Report (Agreement) Title Report Date Agreement Number	Award Date (FY)
1	Preliminary Research Study of a Water Desalination System for the East Montana Area Subdivisions of El Paso County, El Paso, Texas	1995	11	Using Oil Fields for the Disposal of Concentrate from Desalination Plants	2005
2	Wastewater Reclamation Pilot Study	1998	12	Electrocoagulation Pretreatment for Microfiltration: An Innovative Combination to Enhance Water Quality and Reduce Fouling in Integrated Membrane Systems	2005
3	Wastewater Recovery from a Textile Bleach and Dye Operation, Bench Scale Evaluation	1998	13	Evaluation of Membrane Pretreatment for Seawater Reverse Osmosis Desalination	2007
4	Brackish Groundwater Treatment and Concentrate Disposal for the Homestead Colonia El Paso, Texas	1999	14	Cost-Effective Volume Reduction of Silica-Saturated RO Concentrates	2008
5	Development of a Brine Concentration Process Using Membrane Technology for High-Silica Brackish Water 02-FC-81-0835	2002	15	Novel Fouling Resistant Membranes for Water Purification	2008
6	Salinity and Total Organic Carbon (TOC) Removal Using Nanofiltration	2002	16	Reduced Membrane Fouling Potential by Tailored Fluid/Structure Interaction	2008
7	Demonstration Testing of Zenogem and Reverse Osmosis for Indirect Potable Reuse	2002	17	Wind Power and Water Desalination Technology Integration	2009
8	Thermal Desalination Using MEMS and Salinity-Gradient Solar Pond Technology	2002	18	High-Volume Water Recovery from Silica-Saturated RO Concentrate using a Batch-Treatment Seawater RO System	2010
9	Zero Discharge Waste Brine Management for Desalination Plants	2002	19	Aluminum Electrocoagulation and Electroflotation Pretreatment for Microfiltration: Fouling Reduction and Improvements in Filtered Water Quality	2010
10	Solar and Waste Heat Desalination by Membrane Distillation	2004	20	Zero Discharge Desalination Testing at BGNDRF	2010

Science & Technology Internal Research

Internal research is funded under Reclamation's *Science and Technology (S&T) Program*. Through S&T, Reclamation can investigate new and innovative solutions on important issues where there may be a unique or unknown risk and for which capital investment may not occur otherwise. Over the last 7 years, the R&D program has awarded over \$50 million to more than 800 research projects that have led to many important tools, solutions, and improvements in the way we manage our water and power infrastructure and related resources.

The S&T Program is a Reclamation-wide competitive merit-based applied research and development program addressing the challenges faced by Reclamation water and facility managers, and our western stakeholders. Research can address any number of topics related to: environmental issues in water delivery and management; water and power infrastructure reliability; conserving or expanding water supplies; and water operations decision support.

For fiscal year (FY) 2011, research priorities have been focused on addressing challenges associated with climate change, invasive zebra/quagga mussels, and advanced water treatment.

Reclamation employees are the principal investigators eligible to submit R&D proposals and receive proposal awards. Effective partnerships are a primary R&D proposal award consideration. R&D emphasize efficiency and effectiveness through collaborative R&D with stakeholders, universities, non-profit organizations, the private sector, and other local, state, and federal agencies with water and water-related roles and capabilities.



Naval Facilities Engineering Service Center, CA. Through the Affordable Desalination Collaboration, Reclamation is providing assistance on ways to reduce energy usage for both brackish and seawater desalination systems.



RO energy recovery unit (orange), Naval Facilities Engineering Service Center, CA.

Current Status

To date, \$430,000 has been awarded to 3 projects in Texas:

- A partnership with the TWDB and Oklahoma Water Resources Board on a study to evaluate the influence of changes in climate and land cover on water availability in Texas and Oklahoma Reservoirs.
- A partnership with TWDB, San Patricio Municipal Water District, Brownsville Public Utility Board, and Singapore Public Utility Board in the development of a pilot treatment system that could combine the economy of a brackish water plant with the reliability of a seawater plant to desalt highly variable sources of water.
- A partnership with TWDB, CPS Energy, San Antonio Water System, and Dallas Water Utility for a study evaluating applications of nanofiltration treatment technology for water reuse. The report will make conclusions on the efficiency, economy, and environmental impacts related to nanofiltration versus reverse osmosis and identify the next steps required for a potential pilot project.



Reclamation's Expeditionary Unit Water Purifier providing ultrafiltration pretreatment and reverse osmosis desalination of up to 72,000 gpd to a medical center in Biloxi, MS after Hurricane Katrina.

Proposed Projects for Fiscal Year 2012

Three projects have been developed in Texas:

- A partnership with TWDB on a study to identify which water types and concentrations are most appropriate for nanofiltration rather than reverse osmosis.
- A partnership with TWDB in the development of innovative constructed wetlands for removing endocrine disrupting compounds from reclaimed wastewater.
- A correspondence with TWDB and Canadian River Municipal Water Authority on a study of the influence of model structure on biases in retrospective streamflow simulations and on streamflow response to projected climate change.



Reclamation's Expeditionary Unit Water Purifier provided brackish groundwater and seawater treatment for the Variable Source Salinity Pilot Project in Brownsville, TX.

Research & Development Partnership Opportunities Facility & Equipment Resources

Reclamation's state-of-the-art water treatment laboratory and pilot-scale facilities may be available for use on a cost-reimbursable basis. These facilities include: Technical Service Center (Denver, Colorado), Brackish Groundwater National Desalination Research Facility, and Water Quality Improvement Center. Various resources used for R&D programs include: the Expeditionary Unit Water Purifier (EUWP), Vertical Tube Evaporator (VTE) Thermal Desalination Pilot Test, Long Beach Nanofiltration Prototype, and the Reverse Osmosis Treatment Unit for San Joaquin Drainage Program.

Brackish Groundwater National Desalination Research Facility

Brackish Groundwater National Desalination Research Facility (BGNDR) is located in Alamogordo, New Mexico. This facility brings together researchers from other Federal government agencies, universities, the private sector, research organizations, and state and local agencies to work collaboratively and in partnership. The Research Facility is integrated into Reclamation's existing desalination research and development program. It fills a unique role and draws upon the expertise and research activities already established.



Reclamation's Brackish Groundwater National Desalination Research Facility, Alamogordo, NM

Water Quality Improvement Center

The Water Quality Improvement Center (WQIC) is located in Yuma, Arizona. WQIC is a full-service, operational water research center. It consists of a 12,000 square-foot building with three complete test trains and multiple stand alone test devices. It serves as a field site to investigate new and improved water treatment technologies, including pretreatment associated with desalination. The WQIC consists of a research center, an environmental laboratory, and a mobile research facility. The research center contains multiple portable test units and can house partner-supplied testing units as well.



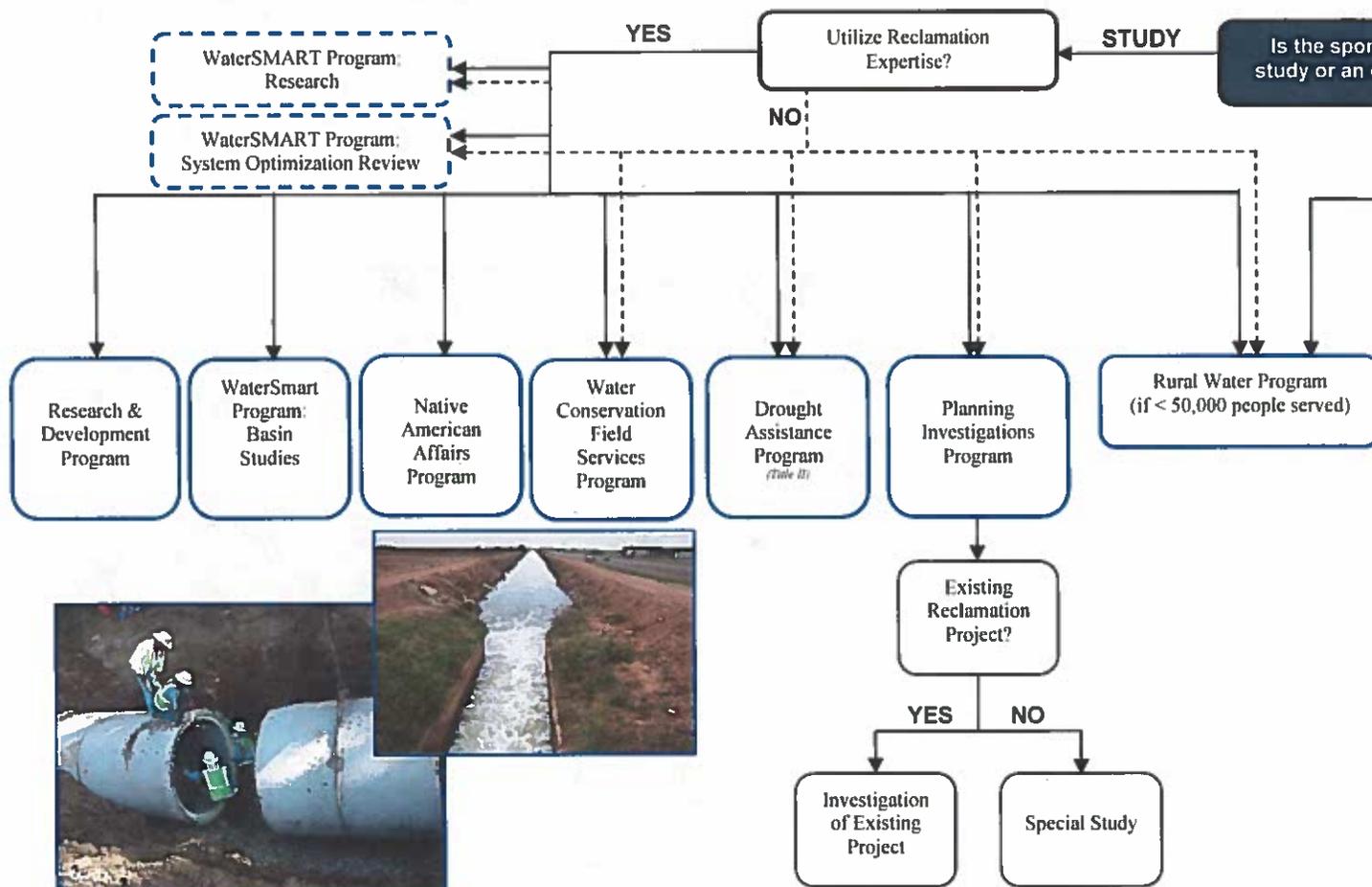
Reclamation's Water Quality Improvement Center (WQIC), a desalination R&D facility which evaluates technology for potential use at the Yuma Desalting Plant in AZ.

To learn more, visit <http://www.usbr.gov/research/>
<http://www.usbr.gov/pmts/water/research/DWPR/index.html>
<http://www.usbr.gov/research/science-and-tech/>

If you have questions or wish to learn more about these programs, please contact your local Reclamation office at:

Oklahoma-Texas Area
Office of the Area Manager
5316 Hwy 290 W. Ste 510
Austin, Texas 78735
512.899.4150
512.899.4179 (fax)

Reclamation Water Planning and



Frequently Asked Questions

Q1. How can I receive funds under Reclamation's various programs?

A. Reclamation has a variety of programs that target different types of entities and projects. Some programs target any state, regional, or local authority; tribe; or district within the 17 Western States, while others target only those entities that have water management authority. Some programs award funds on a competitive basis on a Reclamation-wide scale, while others award funds on a local scale. Table 1 on the reverse page provides a summary of each program. You should contact Reclamation's OTO to find out which program is best for you and to learn about specific program requirements and funding streams.

Q2. Are funding opportunities announced to the public?

A. Reclamation does its best to notify eligible project sponsors of different program funding opportunities. Two programs in particular, namely Rural Water and the WaterSMART Program, announce Reclamation-wide competitive funding opportunity announcements on www.grants.gov. The WaterSMART also allows you to sign up for an email listserv that will notify you immediately of funding opportunities. All you have to do is send a blank email to: join-wfa@listserv.usbr.gov. It is best to communicate with the OTO directly about opportunities for this and other programs.

Q3. What happened to Reclamation's Water 2025 Program?

A. This program has evolved over the years from what was recently known as Water for America (W4A) and Water Conservation Initiative (WCI), into the WaterSMART Program. The program scope has changed somewhat, but the overall funding process is the same. To learn more, visit the WaterSMART website link below or contact the OTO for details.

Q4. Is there a website that describes the details of these programs?

A. The following websites will help you learn more about a few of Reclamation's programs:

- Rural Water Program: <http://www.usbr.gov/ruralwater/>
- WaterSMART Program: <http://www.usbr.gov/WaterSMART/>
- Native American Affairs: http://www.usbr.gov/gp/native_american.cfm
- Water Conservation Field Services Program: http://www.usbr.gov/gp/water/wc_index.cfm

Summary of Reclamation programs

Program	Scope; Time Frame	Federal Cost-Share; Cost-Ceiling	Eligible Entities
Planning Investigations			
Appraisal Study	A study that determines whether there is a need, Federal interest, and a viable alternative; 1 year	100%; up to \$100,000	State, regional, or local water entities; tribes; water districts; within the 17 Western States; typically collaborated through a Reclamation project partner or state water resource agency
Feasibility Study	A study that requires additional Congressional authority and determines whether an alternative is feasible to implement and/or construct; 2-3 years	50%; none	
Construction	Dependent upon specific Congressional authority and appropriations	none	
Special Study	A study of problems, needs, or opportunities; not intended to lead to construction; 2 years	50%; up to \$300,000	
Native American Affairs	A study of problems, needs, or opportunities; not intended to lead to construction ; 2 years	50%; none	Indian Tribe
Rural Water			
Appraisal Study	Determines whether there is a need, Federal interest, and a viable alternative; 1 year	100%; up to \$200,000	State, regional, or local water entities; tribes; water districts; entity with water management authority; within the 17 Western States; must, with some exceptions, serve less than 50,000 people
Feasibility Study	Determines whether the project is feasible to implement and/or construct; 2-3 years	50%; none	
Construction	Dependent upon specific Congressional authority and appropriations	up to 75%; none	
Water Conservation Field Services	Planning or construction of water conservation efficiency and improvement projects; 1 year	50%; up to \$100,000	Reclamation project partners, with some exceptions
WaterSMART Program			
Basin Study	Basin-wide investigation into climate variability and its impacts on water supply needs; 2 years	50%; none	State, regional, local water entities; tribes; water districts; within the 17 Western States; universities/non-profits in some cases (i.e., research)
System Optimization Reviews	Study that improves water delivery efficiency and operations from a regional/basin-wide level; 2 years	<i>Challenge Grants:</i> 50%; generally up to \$300,000 with some exceptions	
Research	Investigations into climate change and water resources management; 2 years		
Water and Energy Efficiency	Construction – improves water delivery and energy efficiency; creates water markets; 2 years		
Advanced Water Treatment	Pilot & Demonstration – construction projects that demonstrate a new technology; 2 years		
Drought Assistance	Drought contingency planning (Title II); construction activities to minimize/mitigate drought losses (Title I); none	100%; none	State, regional, local water entities; tribes; water districts; within the 17 Western States
Title XVI			
Appraisal Study	Study that identifies water reuse opportunities and technologies; 2 years	100%; none	State, regional, or local water entities; tribes; water districts; within the 17 Western States
Feasibility Study	Study that compares a Title XVI alternative to the no action alternative and determines cost-benefits; none	50%; none	
Construction	Dependent upon specific Congressional authority and appropriations	25%; up to \$20 million	
Research and Development	A new technology or a novel method that affects the outcome of a planning study; 3 years	100%; none	Reclamation staff

WaterSMART Basin Study Program

Through the WaterSMART Basin Study Program, the Bureau of Reclamation partners with basin stakeholders on a 50/50 cost-share basis to conduct comprehensive studies to define options for meeting future water demands in targeted river basins in the West where imbalances in supply and demand exist or are projected. Each basin study will include the basic four components:

1. Projections of water supply and demand within the basin, or improvements on existing projections, taking into consideration the impacts of climate change;
2. Analysis of how existing water and power infrastructure and operations will perform in the face of changing water realities such as population increases and climate change
3. Development of structural and nonstructural options to improve operations and infrastructure to supply adequate water in the future; and
4. A trade-off analysis of the options identified and findings and recommendations as appropriate. Such analysis simply examines all proposed alternatives in terms of their relative cost, environmental impact, risk, stakeholder response, or other attributes common to the alternatives. The analysis can be either quantitative or qualitative in measurement.

Who is eligible to participate in the Basin Study Program? States, tribes, water districts, cities, and other local governmental entities with water delivery or management authority are eligible non-Federal cost-share partners.

What is the funding cap? There is no Federal funding cap, but the cost-share amount is usually limited to \$1 million.

When are funding opportunities available? Funding opportunities usually come out in the fall of each year.

How are projects selected for funding?

- **Step 1 – *Letters of Interest*:** Once a funding announcement is made, non-federal entities must submit a letter of interest to Reclamation that is no longer than 3 pages that describes the study scope, objectives and needs, cost-share potential, and stakeholder involvement.
- **Step 2 – *Study Proposal*:** If selected, Reclamation will invite participants to develop a short proposal that will be scored and ranked based on established criteria such as:
 - The extent and consequences of existing or anticipated imbalances in water supply and demand.
 - The extent to which Federal involvement is needed due to the nature and complexity of the issues involved.
 - The existence and quality of data and models available and applicable to the proposed study.
 - The strength of any nexus between the Basin Study and a Reclamation project or activity.
 - The level of Stakeholders interest in and support for the Basin Study.
 - Whether the non-federal cost-share contribution exceeds the required 50 percent.

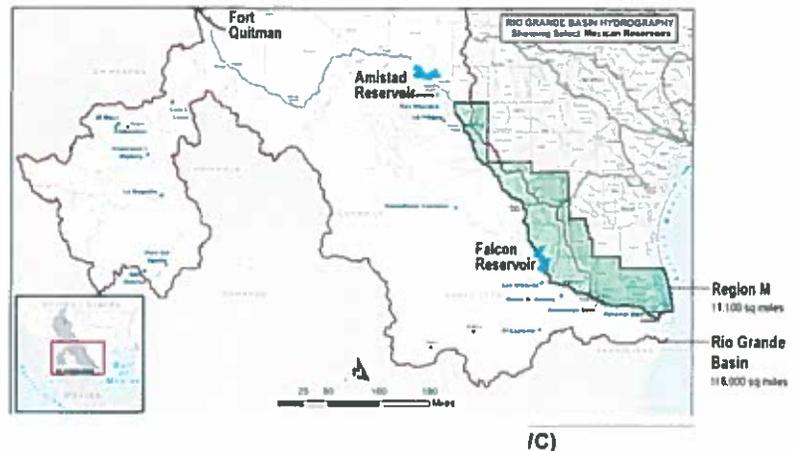
How long do Basin Studies take to complete? Reclamation requires Basin Studies to be completed within two years, with some exceptions.

Contact: **Oklahoma-Texas Area Office:** Collins Balcombe, Program Manager, 512-899-4162, cbalcombe@usbr.gov, or you can visit <http://www.usbr.gov/WaterSMART/bsp>.

Lower Rio Grande Basin Study

Contacts: **Oklahoma-Texas Area Office:** Jeff Gerber, Study Manager, 512-899-4157 jgerber@usbr.gov
Collins Balcombe, Program Manager, 512-899-4162, cbalcombe@usbr.gov
Great Plains Regional Office: Kip Gjerde, P.E. 406-247-7750 Jgjerde@usbr.gov

Reclamation and the Rio Grande Regional Water Authority (RGRWA) and its 53 member entities, in collaboration with the Texas Region M Planning Group, Texas Water Development Board, Texas Commission on Environmental Quality (TCEQ), and International Boundary and Water Commission, are conducting a basin study to evaluate the impacts of climate variability and change on water supply imbalances within an eight county region along the U.S./Mexico border in south Texas (Cameron, Willacy, Hidalgo, Starr, Zapata, Jim Hogg, Webb and Maverick Counties; Figure 1).



The magnitude and frequency of water supply shortages within the study area are severe. The Region M Water Plan states that the population in the eight county region is expected to grow from 1.7 million in 2010 to 4 million in 2060. The water supply shortage is expected to reach a staggering 592,084 af/yr by 2060, which would result in 35 percent of water demands being unmet.

The supply issues facing the Lower Rio Grande River basin are extremely complex, ranging from a multi-national to local scale. First, because the study area is shared by both the U.S. and Mexico, numerous issues are presented both politically and technically. Flows within the Lower Rio Grande River are dependent upon reservoir operations and run-off emanating from both the U.S. and Mexico, which is complicated by issues relating to required reservoir releases pursuant to stipulations set forth in the 1944 U.S.-Mexico Water Treaty.

This basin study will:

- Perform hydrologic projections of water supply and demand in the face of the changing climate.
- Evaluate how existing water and power infrastructure will perform in the face of changing water realities.
- Formulate a range of alternative regional water management options to meet water needs in 2060.
- Evaluate and screen alternatives based on several factors including cost/benefits, public acceptance, and various political, institutional, regulatory, and environmental constraints.
- Recommend a preferred alternative plan to meet planning objectives.

The study is expected to cost \$412,798 (52 percent RGRWA; 48 percent Federal cost share) and take 24 months to complete.

Brackish Groundwater National Desalination Research Facility

500 La Velle Road, Alamogordo, New Mexico

Introduction

The Brackish Groundwater National Desalination Research Facility (BGNDRF) is a federal facility that operates under the United States Department of Interior, Bureau of Reclamation (Reclamation). Established by act of congress, the facility mission is to promote sustainable advanced water treatment research and technology development for inland brackish groundwater sources. The Alamogordo area was chosen as the optimal site based on the wide range of brackish water sources, clear skies for solar powered applications, and a plentiful wind resource.

Mission

The mission of BGNDRF is to conduct research for the development of cost-effective, robust desalination and alternative energy technologies that produce sustainable new supplies of water and power for municipal, industrial, agricultural, and environmental purposes. The facility will serve as a proving ground and center for public education on water and energy.

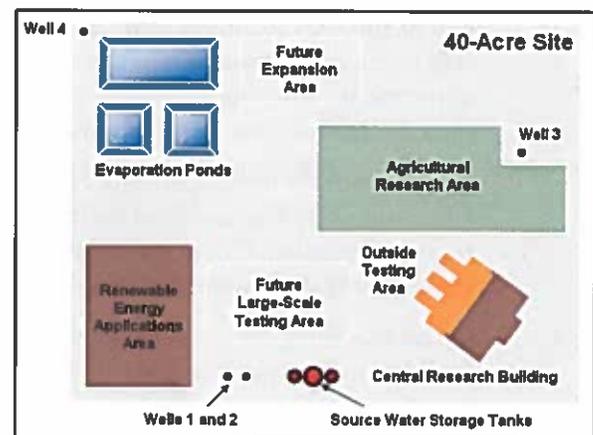
The Facility

The facility includes a Central Research Building located on a 40-acre site. The office space includes a conference room for 30 people, four offices for researchers, water analysis laboratory and a monitoring room associated with indoor test bays.

Testing areas include 6 indoor test bays (13'x40') and 3 outside test pads (20'x 60'). The test bays and test pads are each equipped with dedicated power (120, 240, 480 V), data ports, source water, and service water. The indoor test bays are equipped with instrument air. Source water test flows of 30 gpm (113 L/min) are available at each test bay and 60 gpm (227 L/min) for each test pad. One large-scale outdoor testing area (80'x100', 24.4m x30.5m) is a gravel pad with a source water test flow capability of up to 100 kgal/day (375 m3/day). Other features of the test facility are depicted on the Facility Diagram.

Source water and storage:

- Low TDS well (1,000 – 1,200 mg/L) at 40 °C from the well, a cooling tower is available
- Mid TDS wells (3,450 – 6,400 mg/L) at 21 °C
- High TDS ($\geq 10,000$ mg/L) can be imported to the site
- Desalted well water available to prepare custom water chemistries
- Storage capacity: 1 tank @ 100 kgal; 2 tanks @ 50 kgal; all tanks have 3 fill connections – 1 for Low TDS with or without cooling tower, 1 shared for all Mid TDS sources, and 1 connection for trucked-in water.



Facility Diagram

Services and Supplies

Researchers may bring their own test equipment, supplies, and personnel for testing and monitoring services. BGNDRF staff will perform power and water supply connections. BGNDRF is available upon request for testing 24 hours per day, 7 days per week. There is no limit on duration of testing; however inactive equipment must be moved outside upon request.

Additional services from Reclamation Water Treatment Research and Engineering Team are available for a fee. The team consists of scientists, chemical and environmental engineers with extensive experience in process development, design, construction and testing. Examples of services:

- Process equipment design and construction
- Test plan development and implementation
- Quality control, monitoring, data acquisition, and report preparation
- Process and equipment troubleshooting
- Environmental Technology Validation (ETV) Testing in conjunction with NSF International

Though most arrangements are possible, there are four general levels of testing service available:

- 1) Client has a fully developed process and equipment and desires to verify performance. The Client supplies technical staff to monitor and operate the system. In this case BGNDRF staff will connect equipment to water and power, maintain water supply, and assist with minor adjustments when requested. Client pays space rental fee, water and power usage fees, and staff time for technicians. Client owns all intellectual property.
- 2) Client has fully developed process and equipment but needs assistance in verifying performance. Client can hire Reclamation staff to develop a test plan, perform testing, analyze data, and/or report on results. Client pays for space rental, staff time, and water and power usage charges. Client owns the intellectual property generated by the testing.
- 3) Client has fully developed process and equipment and wants an Environmental Technology Validation Test performed with NSF International and EPA oversight, which if successful would certify the claim made for the equipment. Client supplies equipment and claim to be certified. Reclamation works with NSF International and EPA to develop an approved test plan, and serves as the Testing Organization in the ETV process. Client pays space rental, water and power usage charges, staff time, and NSF International fees for oversight. Reclamation prepares the test report for NSF International for review and determination of success.
- 4) Client has an idea for a process and/or a prototype apparatus. BGNDRF and Reclamation staff can work with the client to design and build a system to test the hypothesis, develop test plan, perform testing, data analysis, quality control, and report on results. In this case the client may want to apply for a research grant in conjunction with a Reclamation scientist or engineer who would apply for internal research funding to help fund the project. Client and Reclamation share expenses and intellectual property.

Disclosure and Confidentiality

Disclosure and confidentiality of data are at the discretion of the clients of the facility.

Fees

The current fee schedule is below. Staff time cost is set by the Bureau of Reclamation. It covers salary, benefits, and overhead. Space rental is negotiable. Power and water are metered at each test bay. ETV Testing is coordinated with NSF International. Fees for NSF oversight are approximately \$100,000 to cover test plan review, audit of test procedures, review of data and report by NSF and the Environmental Protection Agency (EPA), and publication of the report. Reclamation is a certified official ETV Testing Organization. Reclamation's staff time for test plan preparation, implementation, and reporting, and laboratory analysis fees are in addition to NSF charges.

2011 Fee Schedule (subject to change)	Price	Unit
Level 3 Engineer/Scientist	1064	\$/Staff Day
Level 2 Engineer/Scientist	880	\$/ Staff Day
Level 1 Technicians	664	\$/ Staff Day
Interior Bay Rental	250	\$/week
Exterior Bay Rental	400	\$/week
Power	0.15	\$/k Whr
Water RO Permeate (\$2000 set up fee) +	10	\$/kgal
On-site groundwater	2	\$/kgal
Imported (Depends on source)		TBD
ETV Testing Coordination with NSF International	~\$100,000	Per report

Water quality analysis available for staff time charge: conductivity, pH, ORP, Temperature, Colorimetric analyses, Particle counts, Turbidity, Silt Density Index

Candidates for Research

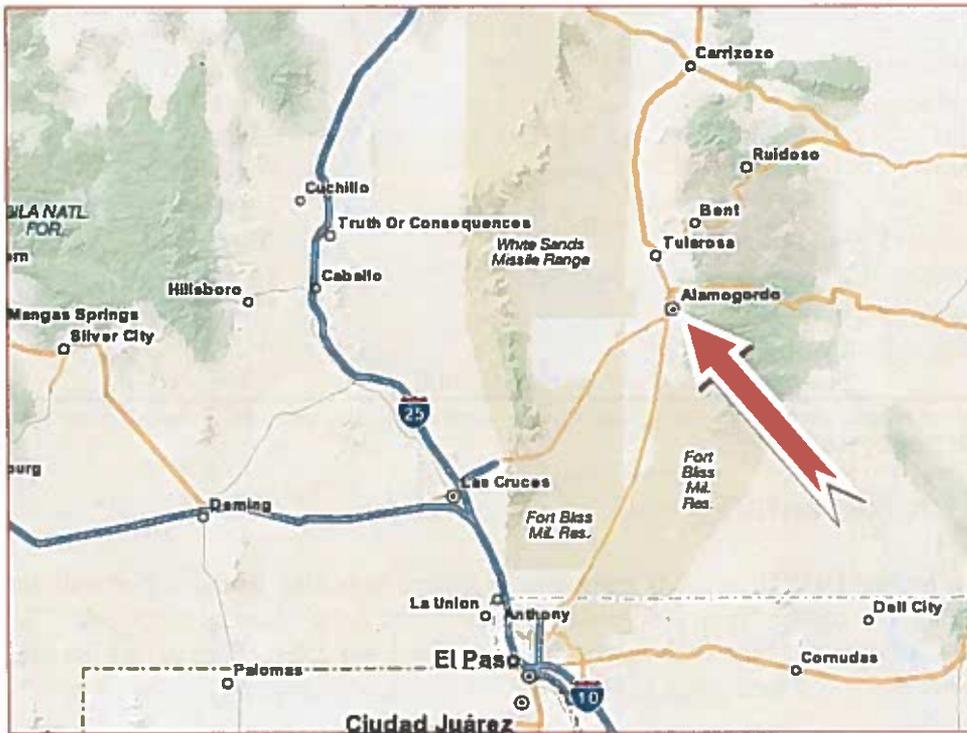
Candidates for research at BGNDRF include anyone interested in testing technologies with the capability of reducing the costs of inland desalination and concentrate disposal and reuse. The Candidates must be prepared to fund their research at BGNDRF for a fee. For current fee schedule, contact Randy Shaw, Facility Manager at (575) 443-6553 (RShaw@usbr.gov).

Getting Started

Potential candidates are invited begin with a tour of BGNDRF. Contact Randy Shaw, Facility Manager to schedule a tour. The next step is to work with Yuliana Porrás-Mendoza, at (303) 445-2265 (YPorras@usbr.gov) and Randy Shaw in developing a facility use agreement.

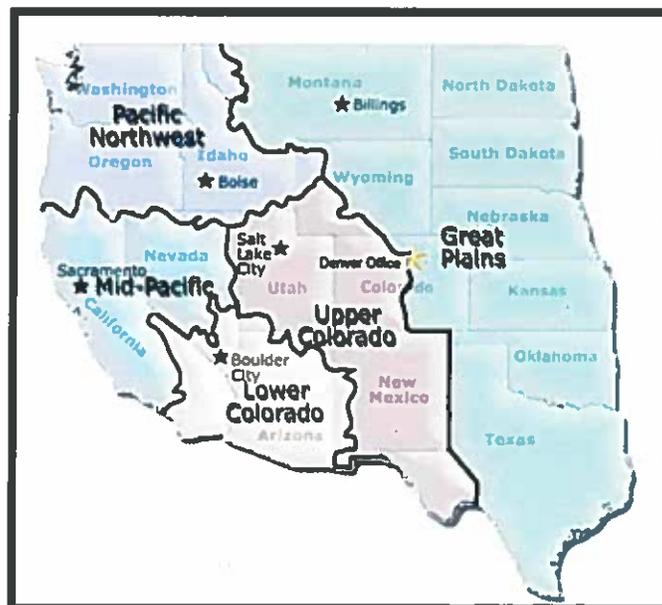
Location and Lodging

BGNDRF is approximately 1.5 hours north of El Paso International Airport (ELP) and 3.5 hours south of Albuquerque International Sunport (ABQ). Recommended lodging within one mile of the Facility are the Holiday Inn Express, Hampton Inn, Comfort Inn and Suites, and Best Western Desert Air Hotel. For maps and more information on the area see the Chamber of Commerce website: <http://www.alamogordo.com/tourism.htm>.



RECLAMATION FACT SHEET

- Manages, develops, and protects water and related resources in an environmentally and economically sound manner in the interest of the American public.
- Is the nation's largest wholesale water supplier, operating 348 reservoirs with a total storage capacity of 245 million acre-feet (an acre-foot, 325,851 gallons of water, supplies enough water for a family of four for one year).
- Provides 1 out of 5 (or, 140,000) Western farmers with irrigation water for 10 million farmland acres that produce 60 percent of the nation's vegetables and one quarter of its fresh fruit and nut crops.
- Is the second largest producer of hydropower in the United States and operates 58 hydroelectric powerplants that annually produced, on average, 40 billion kilowatt-hours for the last 10 years.
- Delivers 10 trillion gallons of water to more than 31 million people each year.
- Manages, with partners, 289 recreation sites that have 90 million visits annually.



Rural Water Supply Program Fact Sheet

Rural Water Supply Program Overview

The Rural Water Supply Program was authorized by Title I of P.L. 109-451, the Rural Water Supply Act of 2006 (Act). This Program enables Reclamation to assist rural communities in the western United States with the planning and design of projects to develop and deliver potable water supplies. Rulemaking to establish the programmatic criteria for the program was conducted with public comment in 2008. The interim final rule became effective in 2009 and the Directives and Standards, which further define Program requirements, responsibilities, and review processes, became effective in 2010.

Under the Program, states (or a political subdivision of a state), Indian tribes, and entities created under state law with water management authority can seek financial and technical assistance to undertake appraisal investigations and feasibility studies to explore potable water supply needs and options for addressing those needs. Reclamation funded 10 appraisal investigations and 3 feasibility studies in Fiscal Year 2010 through the Program.

While the Act provides Reclamation the authority to undertake appraisal investigations and feasibility studies, it does not provide authority to undertake the construction of water delivery facilities recommended for development under the Program. Construction of a project requires a specific Act of Congress.

Federal Assistance for Planning Rural Water Projects

Assistance is available for appraisal investigations and feasibility studies for rural water supply projects intended to serve a community or group of communities, including Indian tribes and tribal organizations, each of which has a population of no more than 50,000 people, with domestic, industrial, municipal, and residential water. Eligible rural water supply projects do not include commercial irrigation or major impoundment structures. While water supply for commercial livestock operations and other industrial uses are allowable under the program, investigations and studies for projects that will provide water primarily for domestic, residential, and municipal uses will receive higher priority consideration.

Eligible entities can participate in the Program by:

1. Working with Reclamation to complete an appraisal investigation or feasibility study;
2. Seeking a grant or entering into a cooperative agreement with Reclamation to complete an appraisal investigation or feasibility study themselves or through their own contractor (both in cooperation with Reclamation); or
3. Submitting an appraisal investigation or feasibility study prepared without any financial or technical support from Reclamation for review and inclusion in the Program. This option provides eligible applicants the opportunity to have Reclamation review a previously completed appraisal investigation or feasibility study and prepare a report with recommendations on whether to proceed to the next step in the planning process.

An appraisal investigation is an analysis of domestic, municipal, and industrial water supply problems, needs, and opportunities primarily using existing data and includes a preliminary assessment of

alternatives to determine if there is at least one viable alternative that warrants a more detailed investigation.

Appraisal investigations will provide a recommendation on whether a feasibility study should be initiated. Reclamation will pay 100-percent of the costs of appraisal studies up to \$200,000 and 50-percent for all costs above that amount.

A feasibility study is generally completed following the completion of an appraisal investigation, and a recommendation for proceeding to a feasibility-level analysis. It is a detailed investigation requiring the acquisition of primary data, and an analysis of a reasonable range of alternatives, including a preferred alternative. A technical and economic analysis is also completed.

Funding for feasibility studies is cost-shared. Reclamation will pay 50-percent and the non-Federal entity will pay 50-percent. Based upon a determination of financial hardship, Reclamation's share of the feasibility study may be increased.

Construction

The Act, the interim final rule, and the Directives and Standards do not impact projects that were authorized for construction prior to enactment.

Based upon the findings of a completed feasibility study, Reclamation will make a recommendation to Congress regarding the construction of a rural water supply project and the appropriate non-Federal share of construction costs. In general, the non-Federal project entities must pay 100 percent of all costs to operate, maintain and repair constructed projects in addition to paying a minimum of 25-percent of the capital construction costs. Non-Federal project entities may be required to pay more depending on the outcome of an analysis of their capability to pay. Indian tribe project beneficiaries may have all or part of their non-Federal construction costs deferred based upon their capability to pay.

Next Steps

To participate in this program, interested non-Federal entities must respond to the Fiscal Year 2011 Reclamation Rural Water Supply Program Funding Opportunity Announcement by January 31, 2011. The Funding Opportunity Announcement outlines all the requirements for requesting program assistance and can be found on www.grants.gov under Funding Opportunity Number R11SF80307.

As noted earlier, eligible entities can also participate by submitting an appraisal investigation or feasibility study prepared without any financial or technical support from Reclamation. If the submitted investigation or study meets the eligibility and prioritization criteria, it will be incorporated into the program. Eligible entities can submit their completed appraisal investigation or feasibility study to their local Reclamation Area Office without having to respond to the FOA. This option provides eligible entities the opportunity to have Reclamation review the previously completed appraisal investigation or feasibility study and, once determined to be complete and technically adequate, prepare an appraisal report or feasibility report, as applicable, on behalf of the entity. Contact your regional representative for additional information on submitting an independent investigation or study for review.

Resolution of Appreciation to Harold Springer

RESOLUTION

WHEREAS, Mr. Harold Springer served on the Engineering and Budget Committees of the Kansas-Oklahoma Arkansas River Compact Commission from 1993 till 1998, and also served as the Compact Secretary and Treasurer from 2003 till 2011.

WHEREAS, in 2011 Mr. Springer retired from his position as the Compact Secretary and Treasurer.

WHEREAS, Mr. Springer did faithfully and diligently serve on the Engineering and Budget Committees, and provided excellent support and service to the Compact Commission as the Compact Secretary and Treasurer.

NOW, THEREFORE, BE IT RESOLVED, That the Kansas-Oklahoma Arkansas River Compact Commission hereby recognizes the dedicated service of Harold Springer to the States of Kansas and Oklahoma, and expresses on behalf of the citizens of both States sincere appreciation and commendation for his service, and extends to him best wishes for the future.

BE IT FURTHER RESOLVED, That this resolution be entered into the record of the 2012 Annual Compact Commission Meeting Minutes and the 2012 Annual Report, and a copy of the Annual Report be presented to Mr. Springer.

Adopted at the Forty Eighth annual meeting of the Kansas-Oklahoma Arkansas River Compact Commission at Marion, Kansas, on this 25th day of July, 2012.