

RECLAMATION
Managing Water in the West

Summer 2013

Plains Talk

NEWS FROM THE GREAT PLAINS REGION

**Alcova - Best
Small Recreation
Reservoir:** *WYAO's
Facility Sees 100,000
Vistor Days*

**Title XVI Greens
Dell Diamond
Stadium:** *OTAO's
Water Reuse Program
Earns Results*

Water Rights: *A
21st Century Issue with
Ancient Roots*

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Plains Talk encourages employee submissions, and assists with developing ideas. Questions about stories or photographic essays should be directed to the *Plains Talk* editor, at 406-247-7610.

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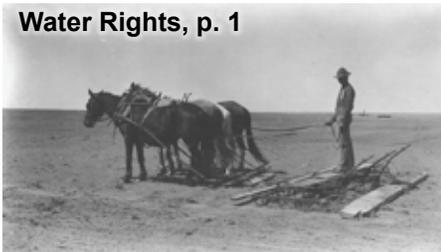
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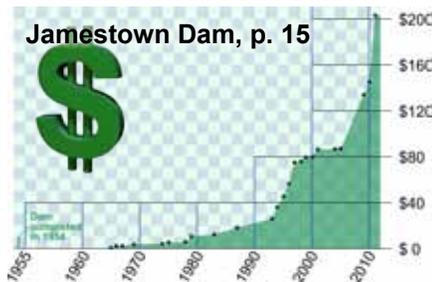
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Whiskey Is for Drinking; Water is for Fighting



(Above) Scratching a living from the arid grasslands of the American West often led to conflicts over water between neighbors - and sometimes between states. National Guard units and militias have been mobilized to protect water sources in the past, and a sound legal framework plays a crucial role in regulating the use and control of water.

By Buck Feist, GPRO

“We do not know the value of water as long as the well isn’t dry.”

-Thomas Fuller, Gnomologia, 1732

Water rights are primordial. Since the era of the woolly mammoth, humans have been developing and refining the customs, laws, practices and precedents governing the use and control of water.

In the United States, water rights are governed by an overlapping network of international

treaties, federally reserved water rights, interstate compacts and state laws.

All four methods impact water operations in the nine-state Great Plains Region.

“Water rights are critical to Reclamation operations,” said Mike Ryan, Great Plains Regional Director. “Water rights impact every citizen in the United States, whether they realize it or not.”

The Advent of Codified Water Rights:

In purely biological terms, water is fundamental to life. Next to air,

water is the most vital element for short-term human survival. But while air is ubiquitous, access to water is limited and supplies are finite.

The earliest example of codified responsibilities and penalties related to water management sprang from the cradle of civilization, the Mesopotamia valley. The Code of Hammurabi is a set of Babylonian laws dating back to 1772 B.C.

The Code is among the most ancient texts in the world. The sixth Babylonian king, Hammurabi, enacted the Code, which was carved onto an eight-foot-high



black stone monument for public viewing.

The laws defined the most serious crimes and punishments, including the regulation of irrigation, water theft and the maintenance of weirs and canals.

As the global population has increased from about a million people at the dawn of the Neolithic Era, 12,000 years ago, to more than 7 billion today, the laws, customs and practices regulating the use and distribution of water have become more complex and more vital to the peaceful functioning of society.

Water Rights: Still the Law of the Land

The concept of establishing water rights developed from the generally held idea of protecting the public interest to encourage economic development and prevent waste.

There are two types of water right systems in the United States: the *riparian doctrine* and the *appropriation doctrine*.

The riparian doctrine originated in England, and is suitable to a humid climate where supply exceeds demand.

Not surprisingly, the riparian doctrine was adopted in the eastern United States. The riparian doctrine grants rights to use water based on land ownership along a stream with equal rights to water use among land owners.

Beneficial use, not land ownership, is the basis under the appropriation doctrine. Priority of date of initiation of use, not equality of right, is the basis of allocation of water when supply is not sufficient to meet demand.

The West was first settled by miners and the appropriation doctrine evolved in a similar manner as applied to mining claims.



(Above) The Code of Hammurabi (1772 BC) is among the most ancient examples of codified water law. A nearly complete example of the Code survives today on a 7.4 ft diorite stele on display at the Louvre Museum in Paris, France. SOURCE: WIKIMEDIA COMMONS

Reminiscent of the mining days, many older water rights have the flow rate in units of miners-inches. In Montana, for instance, 40 miners-inches equal one-cubic-foot per second.

Water Rights in the Great Plains Region:

All states in Great Plains Region follow the appropriation doctrine. The demarcation line between

the riparian and appropriation doctrines is generally the eastern boundary of the Great Plains Region.

Appropriative water rights are property rights. They have the same character of ownership as a house or car. The rights can be bought or sold, with some limitations depending on location.

The predominate characteristic of the appropriation doctrine is



that water rights can be administered or regulated when supply is not sufficient to meet demand.

This means that during water shortages, a water right with a junior priority date may be prevented from diverting water, so a more senior priority water right has sufficient water to meet their demand or beneficial use – in other words, “first in time, first in right.”

The appropriation doctrine is sometimes referred to as the *prior appropriation doctrine*.

Congress recognized the vital nature of water rights in Section 8 of the Reclamation Act of 1902, which states: “Nothing in this act shall be construed as affecting or intended to affect or to in any way interfere with the laws of any State or Territory relating to the control, appropriation, use, or distribution of water used in irrigation or any vested right acquired there under, and the Secretary of the Interior, in carrying out the provisions of this act, shall proceed in conformity with such laws...”

Reclamation interprets Section 8 to mean that the United States is to comply with the substantive and procedural provisions of state law in the construction and operation of Reclamation projects by acquiring water rights under the laws of the state where a project is located.

To that end, there are approximately 800 water rights associated with Reclamation projects in the Great Plains Region. State administration procedures vary across the region.

In Colo., the State Engineers Office administers the water rights under decrees from the Colorado Water Court.

In Wyoming and Nebraska, state water agency personnel administer water rights.

In Montana, a majority of water users on a source of water supply must petition a state district court to appoint a water commission to administer water rights.

Some river systems in the region have water rights administered every year, while some river systems never have water rights administered.

“Even though water rights are regulated by the states, the on-the-ground implications of those rights vary by basin, even within state boundaries,” said Coleman Smith, Wyoming Area Manager.

“For example, disputes over water rights in the Wind/Bighorn Basin tend to be less contentious than in the North Platte Basin, since the North Platte is considered over-appropriated,” Smith said.

The nine states where the Great Plains Region operates each have different laws and processes for granting, perfecting and administering water rights. However, because the states all follow the appropriation doctrine, there are common elements of water rights across the region.

Each water right is defined by a priority date, source of water, quantity (such as a flow rate or volume), purpose of use, point of diversion, place of use and period of use.

Each state recognizes that beneficial use is the basis, measure and limit of a water right.

There are two primary differences in water right laws and processes among the states, such as ownership of the water right and how water rights are administered.

Water rights associated with Reclamation projects are owned by water-user entities such as irrigation districts, municipalities and conservancy districts; held jointly by the water user entities and Reclamation; or held solely by Reclamation.

Of the 800 water rights associated with Great Plains Region projects, about one-half are owned by water user entities.

Water rights used to divert water from the stream and used immediately for the intended purpose are usually held by water-user entities or owned jointly.

Water rights used to divert water to storage are usually held by Reclamation.

Great Plains Region projects are frequently the dominant facilities on their water sources because of the size, and scope of influence of those facilities.

Some projects have water rights that are very senior in priority, but some of the later projects are very junior in priority relative to other water rights on that source.

As the global population increases and escalating demands are placed upon our water resources, the administration and understanding of water rights are vital to towns, cities and farms across the United States.

Reclamation devotes considerable resources to protecting the federal investment in the nation’s projects. One element of protecting the taxpayer investment is protecting project water rights to ensure project water rights get the full benefit they are entitled to within each respective state.



Montana's "Fitness Animals!!"



Montana Area Office employees (left to right) Kevin Wilkerson, Gail Williams and Anthony Chavez participated in MTAO's employee health challenge. The health challenge is an area office initiative designed to encourage employees to stay active and make healthy decisions.

By Paula Holwegner, MTAO

On Feb. 1, several Montana Area Office (MTAO) employees strapped on pedometers and started walking as part of an office-wide fitness challenge. During the competition, which ran from Feb. to the end of April, employees logged their weekly mileage.

"I found that wearing the pedometer is an excellent reminder to be more active," said Anthony Chavez, Administrative Support Assistant. "In an office setting, it's easy to become complacent and lazy, but once I clip on the MTAO pedometer I become a Reclamation 'Fitness Animal,' seeking out calories to burn and new ways to get more Reclamation employees involved in fitness. I have learned from my time in the military that a healthy employee is a productive employee."

Gail Williams, Supply Technician, said, "I decided to enter this Fitness challenge for two reasons: I believe in healthy living and I used to work out and run regularly. I've been trying to find a way to get motivated again and this seemed like a good opportunity. I think being involved in things that bring together employees and encourage interaction outside the daily work duties of our jobs creates a nicer work environment and better relationships between coworkers."

In addition to getting folks thinking about the little things they can do to get healthy, this challenge has been a lot of fun for the employees who participate. Whether Gail, Anthony, and Kevin end up being top competitors or not, they have shared a lot of health tips and laughs, but most importantly, they are much more active than before they started.



Head Covers: Overhauling the Estes Power Plant

By Kara Lamb, ECAO

For three days, Otis Canard and I went back and forth on how to best explain language used in power plant maintenance to a layperson.

For someone who does not work full time in Operations & Maintenance, it can be a challenge to translate technical terms into general language. For those in the plants and engineering, the technical meanings are innate, as obvious as the task at hand.

The current task at hand for the Estes Power plant in Estes Park, Colo., where Canard is the Logistics Management Specialist, is the overhaul of all three hydro-electric generating units.

In October 2012, Reclamation began disassembling each of the units, one per year, starting with Unit #3. ECAO is working closely with Tennessee Valley Authority, the contractor on the project.

“We’re going by ‘Discoveries’ and then machining the runners and the head covers,” said Canard.

But what does that mean, exactly—especially to someone who doesn’t do that type of work, every day?

“Discoveries,” explained mechanical engineer, Edward Steketee, “is a system of disassembly where every component is cleaned and inspected



TVA personnel remove the grease system on the head covers.

as it is removed from the Unit. Any component found to have defects is assessed for repair or replacement.”

At Estes, the turbine runners (the blades of the turbine) were known from prior inspection to have significant wear. The same was true of the head covers.

Head covers are the mechanical part of a unit sealing the top of the turbine, “like the cylinder head on a car engine,” Steketee said.

Headcovers cap the turbine, which consists of the scroll case (the piping through which water flows to make the unit spin), the throttle assembly, the runner (where the turbine blades are housed), the draft tube (which carries the water out of the unit), and more.

The head covers at Estes are originals, installed in the late 1940s. After 60-plus years of work, they leak.

“The head covers are too big for us to machine here,” Canard said. “Once we pull them out, TVA takes them back to Alabama, puts them on a giant lathe that spins slowly while a cutting device reshapes their sides and surfaces, ‘machining’ them.”

While TVA handles the head covers, the crew at Estes does the rest of the work.

This includes overhauling the generator cooling system and brakes, testing the stator and rotor, the power cables out of the



unit, the connections to the outside transformer, and performing high voltage ramp testing.

The local crew is also responsible for all the heavy lifting. The generating units at Estes are “stacked” meaning the generator sits atop the turbine.

Water enters and spins the turbine, which in turn spins the generator. A large magnet inside the generator creates an electrical field as it spins, generating electricity.

To reach the head covers and runners inside the turbine, near

erator. It weighs about 9,500 lbs. The lower bearing bracket weighs 6,300 lbs.

“And the list goes on!” said Canard.

Once these pieces and others are removed, the head covers are extracted. Each piece is examined for structural soundness, repaired (if needed), machined, and put aside until all the work is complete.

Upon each head cover’s return from Alabama, each unit is reassembled with its overhauled parts ready to generate electricity again

and power customers.

“So far, none of those outages are affecting water deliveries,” Carlos said.

Possible loss of power generation was an early concern. Through close coordination and thanks largely to the redundancy of the three units at the plant, power production has continued smoothly.

“Basically, when one of the three units is down for the overhaul, the Casper Control Center just brings one of the other ones on-line,” said Tim Miller, who



(Above, left) Unit #3 runner is removed for repair. (Right) Unit #3 after repairs and coating.

the bottom, the whole unit has to be unstacked, one piece at a time, starting with the generator.

With TVA’s assistance in disassembly, the team at Estes operates its crane within an eighth of an inch tolerance to remove significant portions of machinery.

The heaviest is the generator rotor, weighing roughly 134,500 lbs. Next is the upper bearing support bracket, which weighs about 23,500 lbs.

In the middle, running vertically, is the turbine shaft—the rod connecting the turbine to the gen-

erator for another 60 years.

The broader ECAO team collaborated for the project to come to fruition, especially in scheduling power production outages for each year of work were scheduled ahead of time and within the Colorado-Big Thompson Project’s operating parameters.

“In all, there are 21 outages,” said C-BT water scheduler, Carlos Lora.

Outages are system shutdowns planned ahead of time to accommodate maintenance or other work and reduce impacts to water

also schedules the C-BT.

“It has worked well so far,” agreed John Gierard, Civil Engineer in Power Marketing for the Western Area Power Administration. “There hasn’t been an impact to power supply due to the unavailability of one of the three units.”

In addition to the head covers and runners, Reclamation and TVA are also line boring, replacing and machining the wicket gate bushings, and upgrading greasing systems.



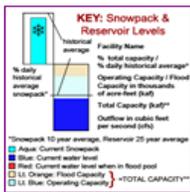
Finding Water Information on the GP Internet

Reservoirs, Dams & Hydropower

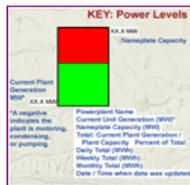
Water is at the core of what we do. This page provides information about [recreation](#), water supply, [dams, projects and powerplants](#) managed by Reclamation's Great Plains Region.

[WaterSMART](#) is Reclamation's new initiative that recognizes the need for a vigorous public discussion over water issues. [WaterSMART](#) is a commitment to moving forward using the appropriate tools to minimize or prevent future water conflict and crises in the West.

Hydropower plays a vital role in fulfilling our nation's energy needs. The Great Plains Region operates 20 hydroelectric powerplants, producing enough electricity to meet the demands of more than 250,000 homes each year. Hydropower is the country's largest and most efficient source of renewable energy.



Snowpack & Reservoir Levels: At a glance status of lakes & reservoirs with live updates.



Power Levels: At a glance status of powerplant generation.



Projects & Facilities Database: Dams, powerplants, histories, specs & more.

Water Operations

Great Plains Region

- [HydroMet-Hydrological Data Center](#)
- [AgriMet-Agricultural Weather Network](#)
- [Water Management Information \(SNOTEL, water-supply reports, allocations, etc.\)](#)
- [U.S. Drought Monitor](#)

Annual Operating Plans:

- [Colorado-Big Thompson](#)
- [Fryingpan-Arkansas](#)

Daily water data, boat ramps & more:



Reservoirs, Dams & Hydropower page.

By Tobias Taylor, GPRO

Water is the core of what Reclamation does. The Reservoirs, Dams & Hydropower web site is a consolidation of the water operations & water management information available for the Great Plains Region.

Over the past decade, the site has grown from separate non-integrated pages to a collection of inter-related sections where users have many different avenues to obtain water information.

The Reservoirs, Dams & Hy-

dropower site is composed of: AgriMet, Hydromet, Boat Ramps, Power Levels, Recreation, Snowpack & Reservoir Levels, Water Management Info and Projects & Facilities.

Reclamation, in cooperation with other federal, state, and local sponsors, has developed an agricultural weather information system called AgriMet.

The original AgriMet program started in the 1980s, and was expanded into Montana (east of the continental divide) in the 1990s.

AgriMet is a network of more

than 90 automated weather stations collecting site-specific weather data.

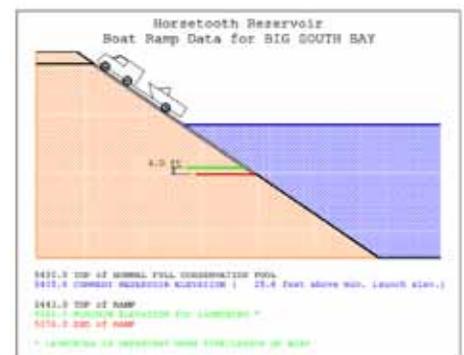
The data is translated into crop-specific water use information. The primary purpose of AgriMet is modeling evapotranspiration to assist farmers in applying the right amount of water at the optimal time to crops.

There are also other uses for AgriMet data, including regional crop water use modeling, agricultural research, frost monitoring, and integrated pest and fertility management.

Reclamation operates a network of automated hydrologic and meteorologic monitoring stations (Hydromet) located throughout the GP Region.

Hydromet collects remote field data and transmits it via satellite to provide real-time water management information. Hydromet data is integrated with other sources of information to provide streamflow forecasting and current runoff conditions.

Based on real-time Hydromet

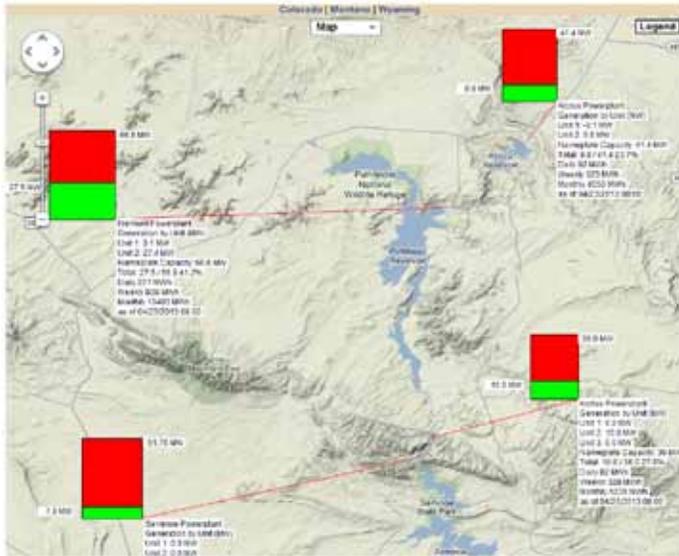


Boat ramp data for Big South Bay ramp at Horsetooth Reservoir.



Power Levels, Great Plains Region

Use mouse to zoom map or use controls to zoom in/out, change orientation, or change map style. For explanation of graph, see legend in the upper-right corner of the map, or view the full legend and associated explanation of legend labels. View the Accessible version of the Power Levels Page.



The Power Level page provides real-time power generation information.

data, Boat Ramp pages display current conditions for the majority of boat launching facilities throughout the GP Region.

Boat Ramp images are generated on-demand, displaying current reservoir elevation, ramp elevation and whether reservoir conditions are favorable for launching.

Hydropower plays a vital role in fulfilling our nation’s energy needs.

The Power Levels page provides real-time power generation status for the 20 hydroelectric power plants the region operates, (producing enough electricity to meet the demands of more than 250,000 homes each year). Hydropower is the country’s largest and most efficient source of renewable energy.

Some GP lakes and reservoirs are nationally recognized and play host each year to tournaments and derbies; others are more suited to quiet family fun, tucked away in isolated but accessible areas within an hour’s drive of major cities.

Facilities for visitors vary

recreation opportunities available.

The current water level of a reservoir is important for many activities.

During flood season, the public wants to know how close a reservoir is to its flood control capacity. Recreation users want to know if the reservoir level is sufficient to safely launch a boat.

The Snowpack & Reservoir Levels page provides current reservoir levels in relation to average historic levels, and percent of total reservoir capacity. Current snowpack levels are also displayed for those reservoirs where data is collected, helping to predict the amount of water that

from highly developed campgrounds to primitive campsites with no commercial development nearby.

The combination of excellent facilities and a diverse fishery contributes to a quality recreation experience.

Visit the Recreation pages to find out more about a facility and specific

will be available during and after snowmelt.

The Water Management section contains information from across the region, such as current operating plans, snow water content graphs, water supply reports, precipitation summaries and reservoir allocation diagrams.

The Projects and Facilities database includes information on Reclamation dams, power plants and projects.

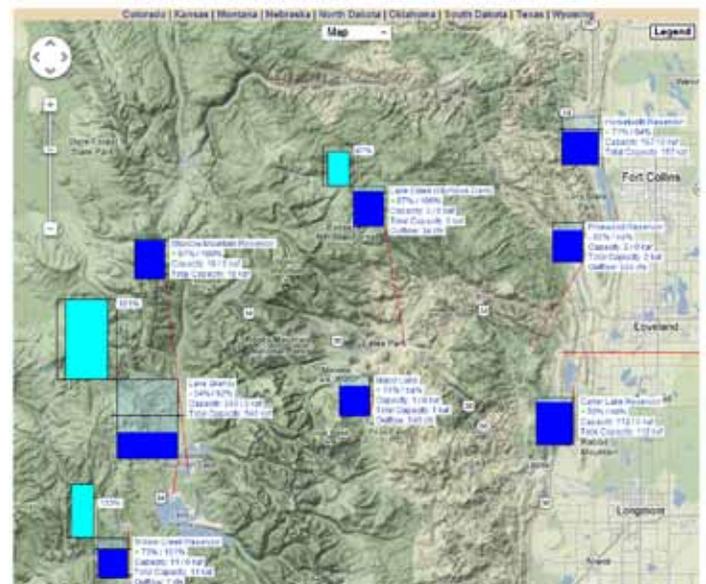
Reservoir pages contain facility specific information, such as current and historical images of the facility, an overview of the geology where the dam was built, the dimensions of the dam and recreation links.

Project pages contain a general description, historical development and construction information, and an overview of the benefits the project provides.

All of these individual water information pages have grown together into one consolidated site – Reservoirs, Dams & Hydropower.

Snowpack & Reservoir Levels, Great Plains Region

Use mouse to zoom map or use controls to zoom in/out, change orientation, or change map style. For explanation of graph, see legend in the upper-right corner of the map, or click here for full legend and associated water operations links.



The Snowpack & Reservoir Level page provides real-time reservoir and snowpack levels displayed on an interactive map.



Alcova Reservoir - Best Small Recreation Reservoir in the West



(Above and right) Recreationists enjoying summer fun at Alcova Reservoir.

By Jay Dallman, WYAO

Alcova Reservoir is on the North Platte River, about 35 miles southwest of Casper, Wyo.

“The Lake”, as it often referred to locally, has become one of the premier water recreation sites in southeastern Wyo.

Fishing at Alcova is very popular. Available fish species include brown trout, cutthroat trout, rainbow trout and walleye. Rainbow and brown trout are stocked annually by the Wyoming Game and Fish Department.

Boating, water skiing and a va-

riety of water sports are common activities at the lake. Camping, hiking, horseback riding, hunting, picnicking, recreational vehicle use and wildlife viewing are favorite activities on Reclamation lands surrounding the lake.

Recreation at Alcova Reservoir is managed by Natrona County Roads, Bridges and Parks Department (NCRBP), under a Memorandum of Understanding with Reclamation.

Park facilities include six campgrounds, eight boat ramps and an interpretive hiking trail. A barrier-free fishing pier, restroom

and shelter are located at Black Beach on the southeast side of the reservoir. NCRBP manages 100 cabin sites and 155 trailer sites at Alcova.

NCRBP also administers leases with Alcova Marina, Casper Ski Club and Casper Boat Club. The Marina has 28 leased RV sites; the Ski Club has 100 RV spaces; and the Boat Club has 12 RV spaces.

According to NCRBP Director Mike Haigler, there has been a steady increase in recreational use at Alcova Reservoir over the past couple of decades and the trend is expected to continue.





Visitors and locals alike enjoy Alcova Reservoir for its numerous recreation benefits, including camping, boating, trail and marina concession, fishing, horse-back riding, hunting, picnicking, recreational vehicles, water sports and wildlife viewing.

“We experienced over 100,000 visitor days in 2010, and by 2030, we expect to see nearly 130,000 visitor days,” Haigler said.

The dam impounding Alcova Reservoir was constructed by Reclamation in the mid-1930s as a means of raising the level of water in the North Platte River 165 feet so it could be diverted into the Casper Canal and provide irrigation water to what is currently 24,000 acres of irrigated farm land in the Kendrick Project west of Casper.

The irrigation distribution system consists of 59-mile-long Casper Canal, 190 miles of laterals and sub-laterals, and 41 miles of drains.

The main canal has a capacity of 1,200 cubic feet per second. The concrete head gate that diverts water from the reservoir into the canal is located about a mile west of the dam.

The dam is a zoned earth fill structure rising 265 feet above its foundation, and containing 1,635,000 cubic yards of material.

At the time of its construction, Alcova Dam was less expensive to build than constructing and operate an electric pumping plant to lift water from the river into the canal.

The reservoir was merely a side benefit of the construction of this high diversion dam for agricultural

purposes.

Alcova Reservoir has a surface area of 2,470 acres and a total capacity of 184,405 acre-feet, of which the top 30,606 acre-feet is active capacity available for irrigation.

Unlike most irrigation reservoirs in the West, Alcova is operated with a very consistent elevation. For the entire irrigation season (April 1 through Sept. 30), the reservoir is maintained at elevation 5,498, plus or minus a foot, to facilitate deliveries through Casper Canal.

In non-irrigation seasons the elevation is lowered 10 feet and maintained at elevation 5,488 plus or minus a foot to prevent ice damage to the Casper Canal head gate.

Even though the purpose of a consistent summer operating level is to facilitate deliveries to the Casper Canal, it may appear to many of the cabin owners and boat dock users that Reclamation maintains that level to make it convenient to operate and maintain their docks.

They don't have to continually extend their docks in an effort to keep up with steadily declining water levels, as would be the case at most irrigation reservoirs in the West.

In addition, when Reclamation lowers the reservoir for winter to keep ice off the Casper Canal head gate, boat dock owners experience the added benefit of being able to avoid ice damage to their docks. It also provides a nice window to perform off-season maintenance while docks are out of the water.

For those owning seasonal homes around Alcova or enjoying water recreation activities on the lake, it's a beautiful arrangement!

Operation of the lake may be for irrigation purposes, but the side benefits for recreation are nothing short of tremendous.

Boating and water skiing are major attractions at Alcova Reservoir, which spans 2,470 surface acres, offering ample room for recreation opportunities.



Joint Venture with the Joint Board



Work crews busting concrete at Fresno spillway.

By Paula Holwegner, MTAO

In 2012, the Milk River Project had two major projects completed by Reclamation at two different facilities, hundreds of miles apart.

What is unique about these two projects is that the work was completed in conjunction with volunteers, materials and equipment provided by the Milk River Joint Board of Control (MRJBOC).

“We are tremendously happy with the success we’ve been experiencing conducting these repairs in this manner,” said Kay

Blatter, President of the Milk River Joint Board of Control. “The MRJBOC has been volunteering time and materials and Reclamation has been fantastic to work with. Together, all of our efforts have made these repairs efficient and effective.”

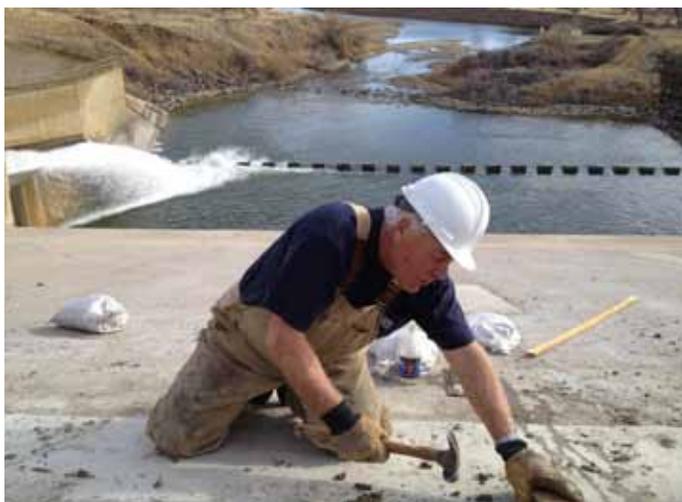
The Milk River Project is considered the lifeline of northern Montana, furnishing water for about 121,000 acres of agriculture land, municipal and industrial water, and benefits to fish, wildlife and recreation.

Work commenced in Sept. on

the Fresno Spillway and in Oct. on Drop 4 (a hydraulic drop on the St. Mary Canal). This was the second year that Reclamation partnered with the MRJBOC to make necessary repairs to this aging infrastructure.

Fresno Dam, constructed in 1939, needed extensive repairs to the spillway structure. In an effort to reduce overall maintenance costs to users downstream, the volunteer forces from the MRJBOC, along with Reclamation employees, began removing selected areas of concrete with jack hammers.

(Left) Worker performs finishing work on Fresno spillway. (Right) Work crews perform concrete placement repair work on chute floor at Drop 4.



After pressure washing the area, fresh concrete was poured. In addition, a portion of the drain system was found to be failing and crews repaired it. This will be an extensive repair project, projected to span 3 - 4 years.

In Oct., 190 miles away near the Canadian border, the same crew set about replacing the ogee structure on Drop 4 (a hydraulic drop on the St. Mary Canal), authorized on March 25, 1905. Work was completed under adverse conditions just before the snow flew.

In the past, the eight irrigation districts on the Milk River had been frustrated with the timeliness and costs to perform infrastructure maintenance and repair.

“This is a unique approach that has been very successful for us,” said Mike LaFrentz, Marias-Milk Rivers Division Manager. “We hope to continue this relationship for many years.”



Concrete placement at Drop 4.

Completed work on Fresno spillway as snow begins to fall.





Fremont Canyon Power Plant Turbine Overhaul

Workers prepare for removal of the thrust block.

By Jay Dallman, WYAO

Turbine replacement and overhaul of generator No. 1 is underway at the Wyoming Area Office's (WYAO) Fremont Powerplant in southeastern Wyo.

The work is being accomplished by WYAO personnel. Similar maintenance was performed on Unit No. 2 in 2012.

The original turbines were put into service in 1961 and last replaced in 1989-1990.

In the late 1980s, the turbines were replaced, primarily to allow more water to be passed downstream through the power plant.

At that time, the combination of new turbines and new generator windings increased the plant's ca-

capacity from 48 Megawatts (MW) to 66.8 MW. The renovated units were capable of passing more water and also generating more electricity.

Brock Owen, a mechanical engineer at WYAO said, "This time, the turbine replacement is happening for different reasons. The current overhauls and turbine replacements at Fremont Canyon Power plant are being undertaken to address severe cavitation damage to the turbines which has occurred since their installation."

The turbines being replaced have required extensive weld repair of the turbine buckets every maintenance season.

During a 2006 inspection, a greater than usual amount of

cavitation was noticed including severe cracks and several turbine buckets with missing material.

These buckets were repaired by removing all of the severely damaged portions of the bucket and then welding in new formed sections of matching stainless steel.

"One of the problems introduced by the continuous cycle of weld repairs is a deviation from the original hydraulic shape of the discharge end of the buckets," said Owen.

Welding and grinding to restore the surfaces of the turbine buckets often result in changes to the original shape. This deviation in the turbines' designed hydraulic shape can accelerate cavitation damage.



“Another problem stems from the fact that when new pieces are welded in, it creates heat-affected zones,” Owen said.

“These heat-affected zones result in material around the new sections becoming hard and brittle, thus being more prone to further cavitation damage. Eventually the repairs will crack and break off, creating an even larger area to repair the next time.

“This cycle can be expected to continue until the turbine eventually becomes inoperable and irreparable which will result in the loss of generation. For this reason, it was determined that the turbines needed to be replaced,” Owen said.

The disassembly of Generating Unit No. 2 at Fremont Canyon began Oct. 2011, and the runner replacement and mechanical overhaul was successfully completed Aug. 2012.

The generator was made available five days after completion

and was operated non-stop until the end of Sept.

Currently, Unit No. 1 is disassembled and the overhaul of its turbine machinery components is in progress.

During a turbine replacement several mechanical components of the turbine machinery and generator are inspected, cleaned and repaired, or replaced. Many of the turbine machinery components will be inaccessible after the generator is reassembled.

The turbine machinery work consists of replacing wear surfaces such as bushings and stationary wearing rings; repairing wicket gates; re-babbiting the turbine guide bearing; blasting and recoating (painting) the head-cover, shift ring, and other pieces of turbine machinery; replacing all packing; and installing a new computer-designed turbine runner.

Generator work includes re-babbiting of the thrust, upper guide, and lower guide bearings;

cleaning of the stator and rotor, and cleaning of the air cooler tubes.

All of this work, with exception of the contractor-completed blasting and recoating of the turbine machinery and re-babbiting of the unit bearings, has been accomplished by WYAO’s Mobile Mechanic Crew with support from the Fremont Canyon/Alcova/Glendo mechanics, electricians, hydro repairman and PSII.

It is noteworthy that WYAO is able to accomplish this type of work in-house.

According to Denver Technical Service Center personnel, other than a couple area offices in the MP region and Hoover, the WYAO is the only other office in Reclamation to successfully complete this type of work with in-house personnel.

(Left) A worker prepares for line boring of the wicket gate bushings. (Right) The old runner is removed.



Title XVI Greens Dell Diamond Stadium



City of Round Rock officials, representatives from HDR Consulting, and Collins Balcombe, OTA, attend a ribbon cutting ceremony to showcase the first irrigation of a professional ball field with reclaimed water.

By Kimberly Parish, OTA

The City of Round Rock, Texas, has knocked it out of the park when it comes to water conservation and reuse. Round Rock was awarded \$1.2 million under the American Recovery and Reinvestment Act (ARRA) to complete Phase I of their Reclamation-approved Title XVI water recycling project.

Phase I included construction of treatment, storage, and pumping facilities at the Brushy Creek Wastewater Treatment Plant, along with installation of approximately two miles of pipeline to provide up to 2,500 acre-feet per year of reclaimed water to various customers throughout the city.

Oct. 24, 2012, was the Grand Opening of the Reuse Water System at the Dell Diamond Stadium in Round Rock. Dell Diamond is home to the Round Rock Express minor baseball league, as well as to numerous other events and concerts throughout the year.

“Who would have thought Bob Dylan would be standing on grass irrigated with poop water?” said Collins Balcombe, Title XVI Coordinator. Dell Diamond is the first Reuse Water System customer for Round Rock and is the first professional baseball field to be irrigated with reuse water in the United States.

City officials and park owners expressed their excitement about the many benefits derived by utilizing water reuse and cited several key reasons for embracing water reuse, including the conservation of drinking water, a lower cost to the end user and no imposed water restrictions during critical drought periods.

The city is not stopping there though - future phases include an additional 4.3 miles of pipeline, as well as additional storage and pumping facilities to serve higher education campuses, schools and parks in the north-east part of the city.

Round Rock has set an excellent example of how Reclamation can help support local communities that want to conserve our natural resources and benefit from the implementation of water reuse.



Jamestown Dam = \$200M Taxpayer Benefits



Jamestown Dam flood control benefits, by water year. Total flood benefits from 1955 - 2010 equal \$203,650,700.

By Patience Hurley, DKAO

Flood control is one of many benefits the Great Plains Region brings to the nation is flood control.

According to the National Flood Insurance Program, flood damage between 2002 - 2011 totalled more than \$2.9 billion. Floods are the number one natural disaster in the United States - and most homeowners insurance does not cover flood damage.

Jamestown, ND, is no stranger to floods. High water was long-standing problem for the city and the lower James River Valley.

Settlement in the James River Valley began with construction of the Northern Pacific Railway in 1871 when railroad workers and their military guards established a camp on the bank of the river.

This camp later became Jamestown. The most rapid settlement of the valley was from 1890 to 1910.

During the war years, 1914-1920, a strong demand for wheat was a factor in making it the most important cash crop. During the drought period in the 1930s,

with almost complete crop failure for several years, many farmers were forced to abandon their holdings and leave the area; livestock numbers were also drastically reduced because of feed shortages.

Jamestown is typical of many areas in North Dakota, which lacks mountains and many natural lakes to hold run-off and heavy rainfall. The area often faces either crippling drought, or an inundation of high-water from spring melt and rainfall.

During the first-half of the 20th century, proposals to develop the river had been forwarded by private engineering firms, federal agencies and state organizations. It was not until passage of the Flood Control Act of 1944 that Jamestown finally got flood control on the James River.

The Jamestown Dam was completed in 1954, and has since provided benefits for flood control, irrigation, recreation, and fish and wildlife.

The flood control feature of Jamestown Dam is effective in reducing flood dangers in Jamestown, North Dakota, and areas downstream along the James River.



Search Reclamation >> U.S. Department of the Interior | Bureau of Reclamation | Great Plains Region Contact Us | Site Index

RECLAMATION

Managing Water in the West

09:22 Wednesday 27 March 2013

Information Portal: Regional Office Relocation (Updated March 8)...

Information Portal: Retirement Readiness Time...

March 21, 2013: Students Square Off in 34th Annual Nebraska Model Bridge Building Competition

March 21, 2013: Larry G. Schen Receives 30th Annual Career Service Award

March 13, 2013: Shooting for the Stars! 2013 GPASC Conference

March 13, 2013: National Women's History Month Diversity Observances - March 12, 14 & 26

March 6, 2013: Meet Randall Sullivan



Click image to read the story

Question of the Week

Which of the following is not a Reclamation project?

[View Current Results](#)



[Last Week's Results](#)

[previous questions](#)

GP Blog

Re: New Manager for Canyon Ferry
Congratulations Bill!! We will miss you!

Re: New Manager for Canyon Ferry
Congratulations Bill. I'm sure you'll enjoy the outdoors of Montana!

Re: Casper Control Center Apprenticeship Graduations
Congratulations Everett and Steve. Good story Jay.

Important Dates:

- Monday, May 27, Memorial Day
- Thursday, July 4, Independence Day

[\(Complete List of Holidays\)](#)

Information Portal:
GP Intranet

By Tobias Taylor, GPRO

The Great Plains Region's Intranet streamlines many business activities for employees and serves as an information portal to commonly used sites.

Employees can accomplish many tasks such as filling out time and attendance in the E-TAS system, accessing pay information from Employee Express, checking the status of their retirement investments on the TSP site and much more.

The Electronic Plains Talk Blog features stories, photos and events from around the region.

The most recent stories posted to the blog are highlighted in the content rotator and as text links on the main page.

Employees are encouraged to submit comments on the stories they read and enjoy. The three most recent blog comments are displayed as part of a feed under the heading GP Blog on the main page.

"Question of the Week" has been a feature of the Intranet since May 2008. Each week, a question about Reclamation, our projects, water trivia and other items of interest is posted for employees to answer. The previous week's results and links to previous questions are available for employees to browse.

Important events and long term projects are highlighted to the left

of the content rotator on the main page, keeping employees informed and up-to-date.

Two current items being featured are the Regional Office Relocation – with links to floor plans, building photos, frequently asked questions and work group representatives – and weekly Retirement Readiness tips, which offers tips on health, networking, wealth and more.

Equal Employment Opportunity (EEO) "News You Can Use" is a feature, located below the content rotator, which shares interesting case studies of EEO incidents from throughout government.

These case studies examine real events and show examples of how EEO policy and rules are applied. Three new features are added each month and an archive of all features is available, both from the main page, and the EEO site.

In addition to the information available from the main page, the Intranet site has grown to include over a dozen topic areas.

The Great Plains Region is com-



Students Square Off in 34th Annual Nebraska Model Bridge Building Competition

At the top of the page, there is a navigation bar with icons for Home, Search & Contact, GP Intranet, and GP Intranet. The main content area features a photo of a group of students and a text article titled "Students Square Off in 34th Annual Nebraska Model Bridge Building Competition". The article describes a competition where students from 11 Nebraska schools gathered at the Regional Aquatics Center in Omaha, Neb., to compete with model bridges. The article mentions that the contest is held in conjunction with National Engineers Week and is sponsored by the Reclamation's Nebraska-Ryegate area office. It also notes that the competition is organized by the Nebraska Society of Professional Engineers, the Nebraska Society of Professional Engineers, the State Engineering and Testing, and the Register of Professional Engineers.

Electronic Plains Talk blog.



Regional Diversity Committee & Diversity Activities in GP

The Great Plains Region Diversity Committee assists the Regional Director/General Counsel in creating a work environment that is inclusive and also encourages respectful understanding and acceptance.

The Guidance for the Diversity Committee puts in place a 5 person team to work with the Council to:

- establish and maintain a workplace that is welcoming to all
- recognize, celebrate,
- value each person's contribution, and
- respect our diverse backgrounds.

The current Diversity Committee members are:

- John Boock - Deputy Regional Director (Chairman)
- Patricia Hahn - DEAO (Business)
- Jeff Cole - Regional Office (HR/OPS)
- Shelly Ruff - Regional Office (HR/OPS)
- Karen Jensen - DEAO (Contract)

Please contact any of the Committee members with suggestions or comments regarding Diversity/Special Employee activities.

People in Great Plains

Meet Randall Sullivan - Electrical Engineer

Diversity Materials

- Regional Diversity Committee Minutes - 09/14/12
- Regional Diversity Committee Minutes - 09/17/12
- Reclamation Diversity Council Minutes - 09/27/12
- Social Business Process Handbook
- Cross-Cultural Student Council Handbook

The purpose of the Diversity Committee is to assist the Council in creating the diverse-work and spirit of the Region. The Diversity Committee will serve in an advisory capacity to the Council and will also conduct or assist in diversity activities approved by the Council. The Diversity Committee will also identify diversity-related issues in the Region and make recommendations to the Council as appropriate.

Diversity among employees brings a variety of unique and valuable perspectives, skills, and experiences that enhance the services and products we provide to our customers. The Region understands the importance of making individual and organizational commitments to foster a positive work of diversity in all work and non-work related social activities.

Diversity: the art of thinking independently together - Malcolm Forbes

Please send any comments regarding the Diversity web page to [DCC@recl.com](#)




Diversity main page.

mitted to creating an inclusive and diverse work environment. To support this commitment, the Diversity site was created.

A new addition to the Diversity site – which helps support and emphasizes the diversity of the region

Great Plains Administrative Region Council

We are pleased to announce the formation of the Great Plains Administrative Region Council. The Council will be responsible for providing guidance and support to the Region's administrative staff. The Council will meet on a regular basis to discuss and address administrative issues. The Council will also be responsible for reviewing and approving administrative policies and procedures. The Council will be composed of representatives from all administrative departments. The Council will be chaired by the Deputy Regional Director. The Council will report to the Regional Director. The Council will be a key component of the Region's administrative structure. The Council will be a valuable resource for the Region's administrative staff. The Council will be a key component of the Region's administrative structure. The Council will be a valuable resource for the Region's administrative staff.

Upcoming Events, Events and Related Links

• [Regional Diversity Committee Meeting - 09/14/12](#)

• [Regional Diversity Committee Meeting - 09/17/12](#)

• [Reclamation Diversity Council Meeting - 09/27/12](#)

• [Social Business Process Handbook](#)

• [Cross-Cultural Student Council Handbook](#)




GPASC main page.

– is the People in GP program.

Each month, People in GP features an employee from around the region and shares information on their background, job duties, hobbies and favorite thing about working for Reclamation.

There are many employee organizations in the GP Region; two groups have a strong presence on the Intranet site. The Great Plains

Administrative Support Council (GPASC), comprised of administrative professionals from across the region, uses the Intranet site to share information on upcoming meetings, minutes and event and award photos.

Support Our Troops, a program that began in 2003, focuses on employees and their relatives who serve in the armed

Support Our Troops!

UNITED STATES ARMED FORCES

ANSWERING THE CALL TO DEFEND FREEDOM

Support Our Troops is a program that began in 2003, focuses on employees and their relatives who serve in the armed forces. The program provides support and resources for employees and their families. The program includes a variety of services, including financial counseling, legal assistance, and more. The program is a key component of the Region's support for our troops. The program is a valuable resource for employees and their families. The program is a key component of the Region's support for our troops. The program is a valuable resource for employees and their families.




Support Our Troops main page.

guidance, HR forms, training links and policy information for managers, supervisors and employees throughout the region.

Need help with that new iPhone or iPad?

Save a phone call and visit the ITS Intranet site. Nearly a dozen tips on using an iPhone and iPad have been added to the site.

Topics range from how to save battery life by turning off Wi-Fi, to sending multimedia as e-mail attachments, to how to use Siri - the voice activated intelligent personal assistant.

Explore the GP Intranet to see how it can help you work more effectively.

forces.

Have a question about EEO? The GP EEO Intranet provides – or in some cases connects you to – information necessary to understand EEO and the Federal EEO complaint process.

You can access Topic Pages with information on EEO basics, the EEO complaint process, alternative dispute resolution, the use of official time and government equipment in the complaint process, harassment, reasonable accommodation, and reprisal.

New to Reclamation or a veteran with a question about health benefits?

The Human Resources site provides HR information and guidance – including new employee orientation materials, employee benefits, ethics

EEO: Welcome

Robert Anthony
EEO Program Manager

Quick Links

- Home
- Programs
- Working for you

Recent Fed. Civil. Case Decisions

- Court news alert on 09/18/12
- Fed. courts can order further - Title VII
- Fed. courts can order further - Title VII

Welcome to the equal employment opportunity (EEO) intranet site for the Great Plains Region. For an overview of this site's content and navigation features, [click here.](#)

Message

The mission of the Great Plains (GP) Region EEO program is three-fold:

1. prevent unlawful discrimination in the workplace through education and communication;
2. facilitate the EEO complaint process if a person alleges unlawful discrimination; and
3. resolve EEO disputes as early in the process as possible through collaborative conflict management. [»](#)

Principles

In order to achieve this mission, it is my pledge to you that the GP EEO Office will remain unwavering in its commitment to the following four principles:

1. **Neutrality** – This office does not represent, and is not an advocate for, any party to a dispute.
2. **Transparency** – The more each of us knows about EEO, our rights and responsibilities in the workplace, and managing conflict, the better off we all will be. There is no such thing as a stupid question. If you have a question, please ask. If we can answer it without violating the law or ethical standards, we will give you a full and honest answer. If we don't know the answer, we will be forced to find it for you or direct you to an alternate resource as appropriate.
3. **Confidentiality** – EEO staff will not discuss what you share without your permission. With the following exceptions, we are required to report allegations of discriminatory [harassment](#), [illegal activity](#) and [applicable statutes](#) to management so appropriate action can be taken as soon as possible.
4. **Service** – The GP EEO team is dedicated to its role as an information and conflict prevention management resource. If we can be of assistance to you, please let us know. And whether you are a manager, supervisor or staff member, if there is an issue you need to discuss in a safe environment, we are here for you. [»](#)

Working for You

EEO protects everyone in the Federal workplace, so whether you realize it or not, EEO is working for you.

And we will hard every day to provide the right information, in the right format and setting, in the right process, at the right time. This intranet site is one means of accomplishing that work, and it is our visible indication of our ongoing efforts to work to improve our dialogue with you, and our service to you.

EEO Welcome page.



OTAO Demonstrates Potential Desalination Solutions in Texas



Staff from the Oklahoma-Texas Area Office and Policy and Administration Office tour the EUWP in Brownsville, Texas. (Left to right) Jeff Gerber, Kelli Schulte, Thomas Michalewicz, Nicholas Garmon, and Collins Balcombe.

By Collins Balcombe, OTAO

Much of the western U.S. continues to face critical drought.

Several small cities in Texas along the Gulf of Mexico that depend on the Lower Rio Grande River are facing imminent water shortages.

These communities are exploring more reliable supply options such as seawater or brackish surface and groundwater.

Is it viable to engineer a flexible desalination system that can treat multiple water sources of differing salinity?

No such system is known to exist in the U.S., so research could provide enormous benefits to areas such as the Gulf Coast, where

different sources of water may be available at different times of the day or year.

If successful, these sorts of solutions could impact areas across the nation, such as the Central Valley of California, where flexibility is needed to treat irrigation return flows of various salinity levels.

Reclamation's Water Treatment Engineering Team, in collaboration with the Oklahoma-Texas Area Office (OTAO), recently used Reclamation's Expeditionary Unit Water Purifier (EUWP) to demonstrate a new, flexible, variable-source water desalination system that can treat both seawater and brackish groundwater.

The EUWP was originally

designed by the Department of Naval Research for to treat poor quality water, up to 60,000 mg/L dissolved solids, during times of conflict.

The unit was transferred to Reclamation for research and emergency purposes.

Reclamation deployed the EUWP in 2005 to provide potable drinking water to a hospital in Biloxi Mississippi after Hurricane Rita.

Pilot-testing was carried out in 2012 at the Southernmost Regional Desalination Plant in Brownsville, Texas, with support from the Texas Water Development Board and Brownsville Public Utilities Board (BPUB), using funds awarded under Reclamation's Sci-



ence and Technology Program.

Reclamation's research team has confirmed that, with a slight redesign of the EUWP treatment system, they could treat brackish groundwater with a recovery rate as much as 80 percent as opposed to only 50 percent with seawater.

An international peer review team is currently re-

viewing the results, which indicate favorable energy use and operational conditions necessary for determining the viability of a flexible desalination system.

A workshop is being held later this year to discuss results and build momentum for a demonstration-scale project to better assess cost/benefits.



(Above, left) Nic Garmon, OTA0, collects water quality data from the EUWP.



(Above, right) Energy recovery device used in seawater desalination to reduce energy consumption in the EUWP. This unit is bypassed during brackish treatment.

Ready, Aim, Shoot!



May - August, 2013

Visit the GP Intranet page for details and to submit images

Great Plains Region Photo Contest





Increasing workplace satisfaction and employee morale in the Great Plains Region

Take Action



Great Plains Region, Steady as She Goes ...

By Sterling Rech, GPRO

If a rising tide lifts all boats, it stands to reason that the opposite would also be true.

But the results of the 2012 Employee Viewpoint Survey show the GP Region to be an exception, maintaining even scores despite a myriad of pressures on the federal workforce.

During the past three years, federal employees have faced numerous challenges, ranging from austere budgets, pay freezes, and limits on travel and training, to hiring freezes, suspension of awards and bonuses, and a host of other stressors.

The pressure on federal employees was clearly reflected in the national EVS results.

Response rates nearly tripled from 260,000 in 2010, to more than 687,000 in 2012. This is significant because surveys are typically self-selecting, meaning unsettled employees are more likely respond than employees with a positive or neutral perspective on the workplace.

Despite the unprecedented increase in respondents nationwide, the GP Region's response rates remained relatively flat, at 65 percent.

"Since 2008, the Great Plains Region has had a very healthy

response rate to the Employee Viewpoint Survey," said Mike Ryan, Great Plains Regional Director. "We saw a nice increase between 2006 and 2008 which coincided with the formation of the Regionwide Take Action Initiative."

The TAI was chartered by

2013 Take Action Initiative Team Members:

- **Nancy Wilson, NKAO**
- **Robin Scott, ECAO**
- **Gary Brownlee, OTAO**
- **Kevin Wilkerson, MTAO**
- **Marcia Buchholz, GPRO**
- **Elizabeth McPhillips, DKAO**
- **Alyssa Louria, WYAO**
- **Jerry Leggate, GPRO**
- **Sterling Rech, GPRO**
- **Buck Feist, GPRO**

the Regional Leadership Board (RLB) in 2007 to focus on employee morale and workplace satisfaction across the nine-state region. TAI uses the EVS as its targeted indicator to determine the success of efforts and programs aimed at making the region a great place to work.

Now in its sixth year, TAI has been active around the region.

The primary drivers of the program are the Area Office representatives, who attend monthly meetings to brainstorm ideas to improve morale and workplace satisfaction.

"The Quality Service Board (QSB) has served as the focus group for the Dakotas Area Office implementation of TAI, and publishes a newsletter which is distributed electronically to all employees," said Dakotas Area Manager, Dick Long.

"The Dakotan Newsletter has been well received by our employees and has been a very positive and effective way to improve communications within the Area Office," Long said.

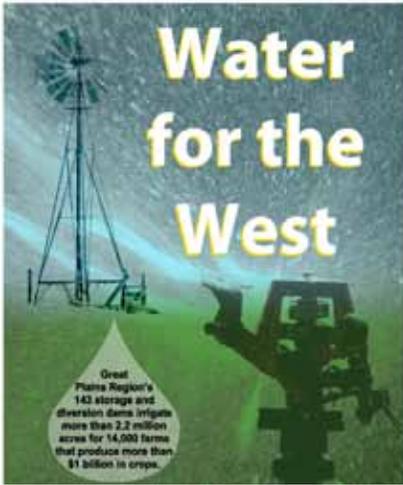
Two areas TAI has focused on since its inception are Performance Appraisals and supervisor/employee communication.

Between 2006 and 2012, the region has seen a steady increase in performance ratings for employees.

Each year, the TAI chooses a general theme to highlight. For FY 2013/2014, the region is focusing on Reclamation's core missions in an effort to highlight the numerous benefits our employees help provide to the American public.

The safe and reliable delivery of





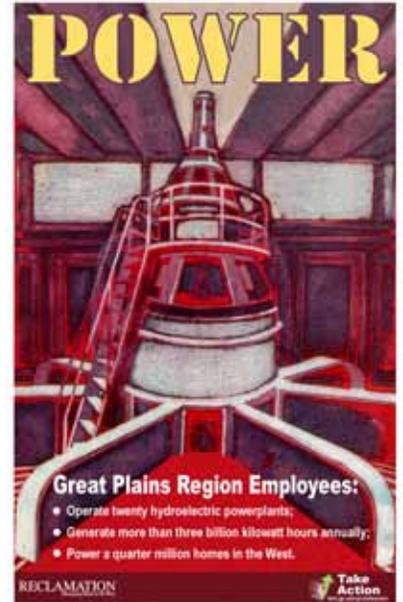
Posters highlight the core mission of Reclamation, which includes providing water and power for the American West.

renewable hydropower and clean drinking water are only a part of what comprise Reclamation's mission.

The agency also provides critical support to agriculture and small communities by supplying irrigation water. Reclamation operates and maintains infrastructure to prevent catastrophic flooding and reduce environmental impacts.

Reclamation also serves millions each year through valuable recreation opportunities on the many reservoirs across the West.

One purpose of TAI is to provide management and employees with regular reports and updates on the region's progress with morale and workplace satisfaction.

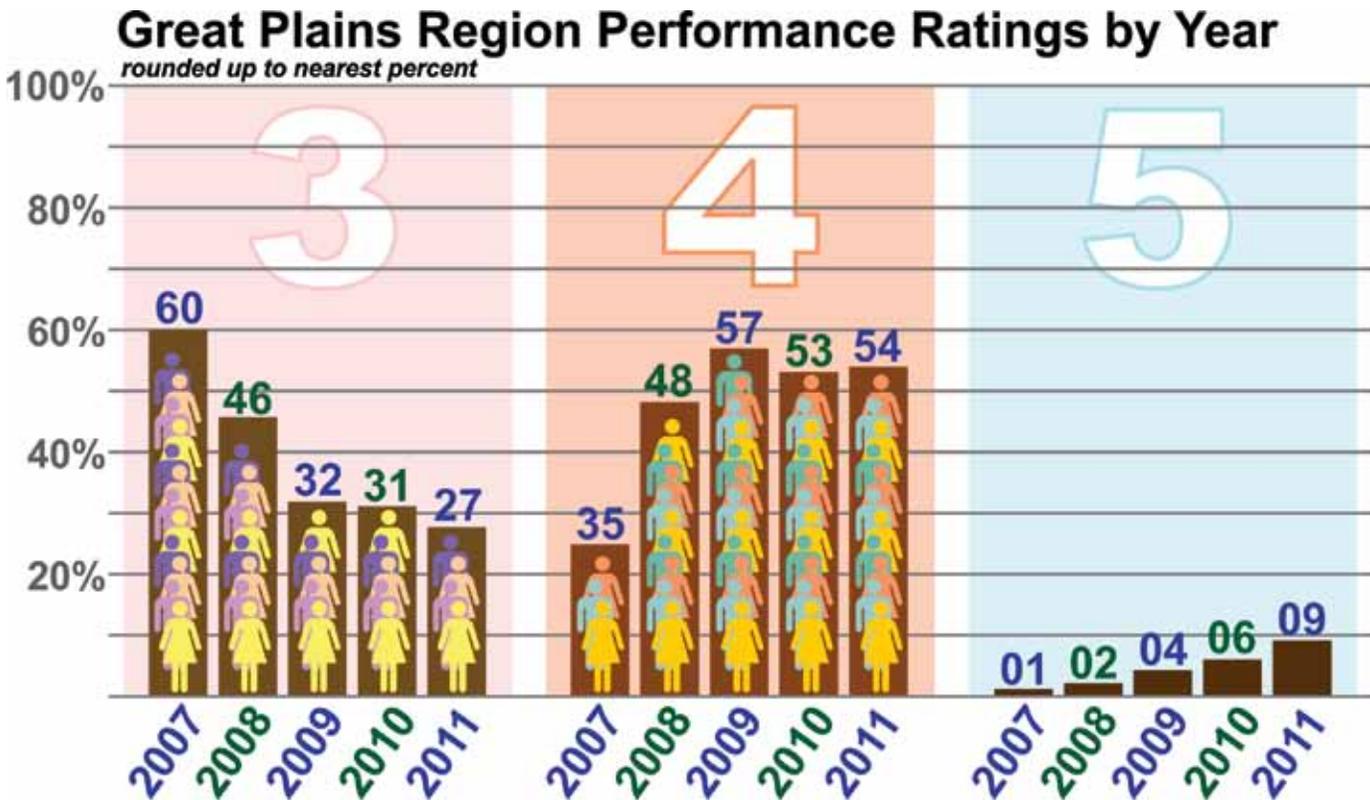


The team put together a presentation that was delivered during the Mar. 2013 RLB meeting, providing an overview of the results from the 2012 survey, including a comparative analysis with past survey results and an overview of where the TAI will focus its energy moving forward.

The top decreases in positive responses from 2010 to 2012 had to do with pay, awards, training, and available resources, areas that have been impacted on a national level by budget reductions on other actions.

But overall, the region maintained the nearly 8 percent increase in cumulative positive responses that occurred between 2008 and 2010, the first survey after the TAI was formed.

"I was pleased with the results this year," said Ryan. "It was encouraging to see that GP is holding our own during challenging times and continues to maintain the hard-won progress from previous years."



DKAO Battles Ice and Flood to Restore Habitat Benefits



(Above) Contractor Smith-Root, Inc., installs PVC raceways for conductors from the control building, located up the hill to the left, to the Fish Barrier electrodes in the concrete culverts below.



(Right) One of the new junction boxes located just behind the headwall.

By James Thornburg, DKAO

An important structure is repaired to once more provide water and habitat benefits to Arrowood National Wildlife Refuge.

An electric fish barrier located a mile downstream from the refuge was originally constructed in 2008 to keep rogue fish out of the refuge and promote growth of native water vegetation for water fowl.

Fully operational for only a year,

the electric fish barrier experienced substantial damage to the wiring conduits and the control building during the extended flooding in spring 2009.

At the height of the floods in both 2009 and 2011, the water level was about six feet above the top of the road over the culverts.

Most of the damage was from flows of ice through or against the culverts. When water had risen to the top of the culverts,

flows of 12-inch thick ice chunks would lodge against the head wall until the far end of the ice would swing like a door down into the water and seal off the end of the culverts.

The ice chunks would eventually break under the water pressure, and with a loud crack the ice would break apart and flow through the culverts at high speed.

Reclamation redesigned the





(Left) Backfilling over new conduit placed on the top of the culverts instead of running along the ceiling. The electrical boxes are placed behind the headwall instead of on the front. Clean sand is placed directly over the conduit to prevent damage from rocks. Material that was excavated to expose the site is then placed and compacted between the conduit runs, and over the protective sand layer.



(Right) Work nears completion. The work site has been backfilled, and Kurtz Road restored.

A layer of protective riprap (rock) is placed around the downstream end of the culverts. The rock was salvaged from the initial excavation.

control structure, stripped it out and moved it to an elevation above Jamestown dam crest, salvaged useable equipment, and replaced damaged or malfunctioning parts to make the structure operational once more.

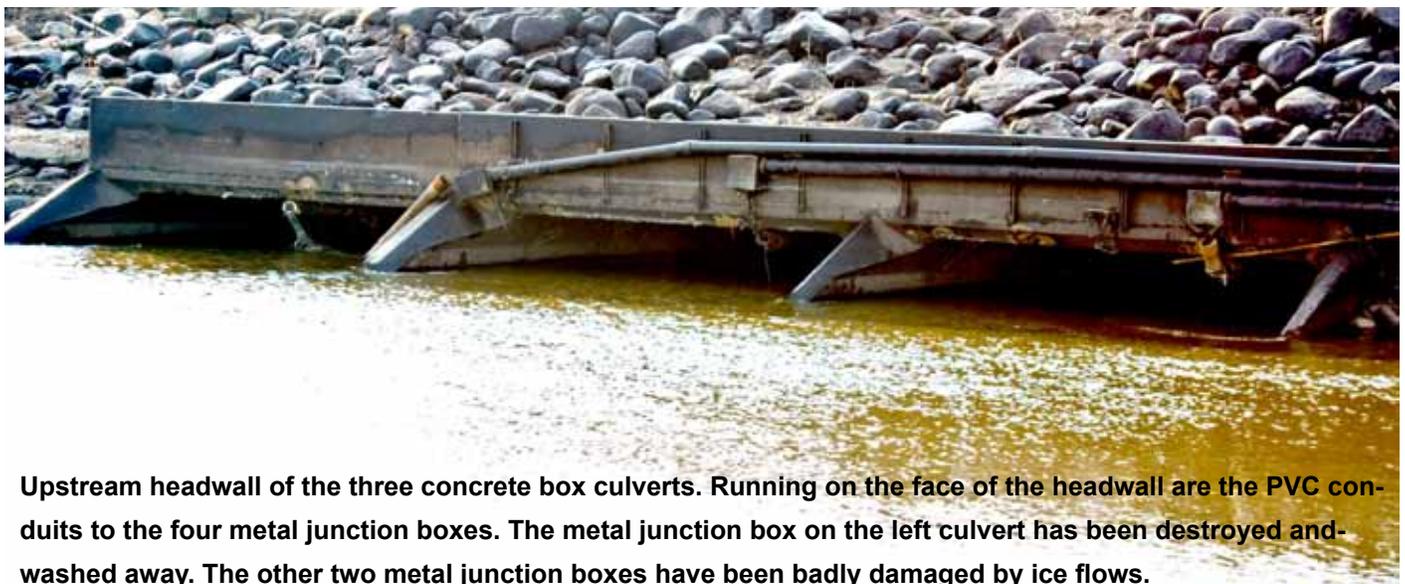
Subsequent flooding and ice moving through culverts again damaged the electrical connections for the fish barrier in spring 2011.

This past fall, broken conduit wires and connections were removed and rock and dirt stripped from

atop the culvert, holes were drilled through the culvert top to allow the wiring and conduits to be reinstalled on top of the culvert, then covered with dirt and rock for better protection.

In March, metal grating trash racks were installed at the electric fish barrier site to keep ice and debris from flowing through and damaging the repaired system.

With the new design in place, DKAO looks forward to years of reliable service from the structure.



Upstream headwall of the three concrete box culverts. Running on the face of the headwall are the PVC conduits to the four metal junction boxes. The metal junction box on the left culvert has been destroyed and washed away. The other two metal junction boxes have been badly damaged by ice flows.



Change in Weather

By Kara Lamb, ECAO

(Above) Each spring, the Fry-Ark West Slope crew has to drive, snowcat, and showshoe into 16 remote diversion dams to clear them of snow.

What will happen if we have back-to-back low water years?

That was the question on the minds of many across Colorado this winter when snow storms were few and far between.

As snow pack numbers trailed last year's, water managers began projecting along 2002 lines—the driest in the last 15 years.

“Snow pack and our related projections had us trailing 2002 and 2012,” said Tim Miller, water scheduler for ECAO's Colorado-Big Thompson Project and Ruedi Reservoir on the Fryingpan-Arkansas Project.

“In places above Green Mountain, Granby, and Ruedi reservoirs, we had snow pack numbers coming into March that didn't even make 60 percent of average.”

All that changed when April finally delivered frequent rain

and snow storms - some packing a foot or more of accumulation. As a result, snowpack rebounded state-wide.

When the Fryingpan-Arkansas Project's West Slope crew headed up to the 16 diversion dams in the upper Fryingpan River, they found themselves in blizzard conditions almost every day.

“There was only one day out of the two weeks we spent opening the system where we weren't in a blizzard,” said Gene Csuti. “At some of the facilities we were digging down through five, six or more feet of snow.”

But is it enough? That question framed a Lake County panel discussion hosted by the local Water Advisory Council in early April.

Reclamation provided updated projected imports for the Fry-Ark Project, which jumped from

around 24,700 acre-feet to about 47,000 acre-feet after the April weather.

Greg Teter, manager of the local Parkville Water District, speculated that recent storms would probably help get them through this year.

State Climatologist, Nolan Doesken, who presented on behalf of Colorado State University, said, “Nine out of ten years, one or more sections of Colorado experience drought conditions.”

He walked the group through past and present precipitation data averages. The northern part of the state has snow pack levels around 90 percent of average; the southwest corner of the state hasn't gained and continues to drop.

“We're in the middle,” Doesken concluded. Although conditions have improved, we're still in the middle of a drought.





Gene Csuti opens Mormon Diversion in blizzard conditions.



Another view of Gene Csuti at Mormon Diversion.



Jeff Ongley takes a brief break from clearing snow.



Matt Robison is dwarfed by snow pack.



16 diversion dams has to be manually cleared of snow.



The hike to Granite Diversion is 1,000 feet down and back up.

GP Celebrates Admin Support Professionals



(Above) The 2013 Great Plains Administrative Support Council Regional Office Administrative Support Professionals. From left to right, Karen Bogue, Kira Harris, Renette Kaline, Marti Urion, Amy Whittington, Linda Deavilla, Marcia Buchholz, Cathie Shoer, Zee Bustos, Tobias Taylor, Sabina Birdwell, Bobbi Mee, Fritzzi Brost, Kevin Wilkerson.



(Right) Kira Harris receives Reclamation's Administrative Professional of the Year Award.

The Great Plains Administrative Support Council (GPASC) conducted its first two-day conference by VTC with much success.

The theme this year was "Shooting for the Stars," and nearly 50 employees attended in-person and by VTC from around the region.

Michael Ryan, Great Plains Regional Director, gave a presentation on common factors of a happy workplace and some low-cost ways to thank coworkers.

There are some qualities that almost all happy workplaces share.

Purpose - get engaged: employees who are actively involved, dedi-

cated, and personally invested in a company produce far better work than those who feel disconnected.

Mastery - face challenges: employees reach max motivation when they engage in activities that are difficult but not insurmountable.

Autonomy - beware of micro-managing supervisors: authoritarian bosses don't give workers much choice on the job. Bosses who make employees feel competent and cared for boost satisfaction, productivity, and company loyalty even further.

Daily Schedule - mix it up: employees who produce on their own clocks and outside the office tend

to be more efficient and call in sick less often.

The conference concluded with the annual Administrative Professional and Service Professional Award ceremony.

Ryan highlighted each nominee, describing their accomplishments for the past year. Nominees were presented with a certificate and a small gift.

Nancy Martin, WYAO, received the 2012 GP Administrative Professional of the Year award. Kira Harris, GPRO received the 2012 GP Administrative Service Professional of the Year award.



Red Willow Set for Fall 2013 Completion



(Above and right) Geotextile fabric is placed on the downstream face of Red Willow Dam to prevent cracks inside the dam from working through to the downstream face and provide a channel for erosion.

Red Willow Dam is located approximately 14 miles north of McCook, Neb. In 2009, two sink holes, two and six feet deep, were discovered on the downstream face of Red Willow Dam near the river outlet works. As a result, the water elevation in the reservoir was lowered and the holes were investigated. Considering the presence of cracks in the dam embankment above the river outlet works and the lack of any filter zone, the decision was made to excavate the downstream face of the dam and place a new two-stage chimney filter and toe drain system on the dam's downstream face.

The existing downstream face was excavated at a 2:1, horizontal:vertical, slope and then a geonet composite, plastic wire mesh sandwiched between two layers of geotextile fabric, was placed on the entire downstream face of the dam. The purpose of the geonet composite is to prevent any cracks inside the dam from working through to the downstream face and providing a channel for erosion. The chimney filter is comprised of an 8-foot-horizontal layer of sand and a 4-foot-horizontal layer of gravel. The sand in the filter prevents the dam core and embankment material from eroding by stopping the material, but allowing water to pass through. The gravel provides a path for the water to flow away from the dam which reduces internal pressures. The chimney drain connects to a drain system along the toe of the dam that directs the water into the discharge basin downstream of both the river outlet works and the spillway. A stability berm was then constructed over the chimney drain to keep the dam in place and protect the drain.

As of May 2013, the construction contractor, SEMA of Centennial, Colo., has placed the toe drain, chimney drain, and stability berm on the dam. They are currently placing topsoil over the downstream face of the dam and the borrow area in preparation for seeding. They have also placed a filter along the bottom of the discharge basin and along the sloped basin bank. The contractor is also working on the slope stability modification, which consists of excavating the steep side slopes on either side of the access road from Highway 83 to the dam and placing the excavated material to a 3:1 slope for greater stability. Reclamation is currently pursuing a modification to place an asphalt overlay over the access road, pave the crest of the dam and install guardrail on both sides of access road and the crest of the dam. Although the current contract completion date is March 2014, the contractor's construction schedule anticipates a completion date of October 2013, pending no major issues.



Reclamation's Mission:

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.



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