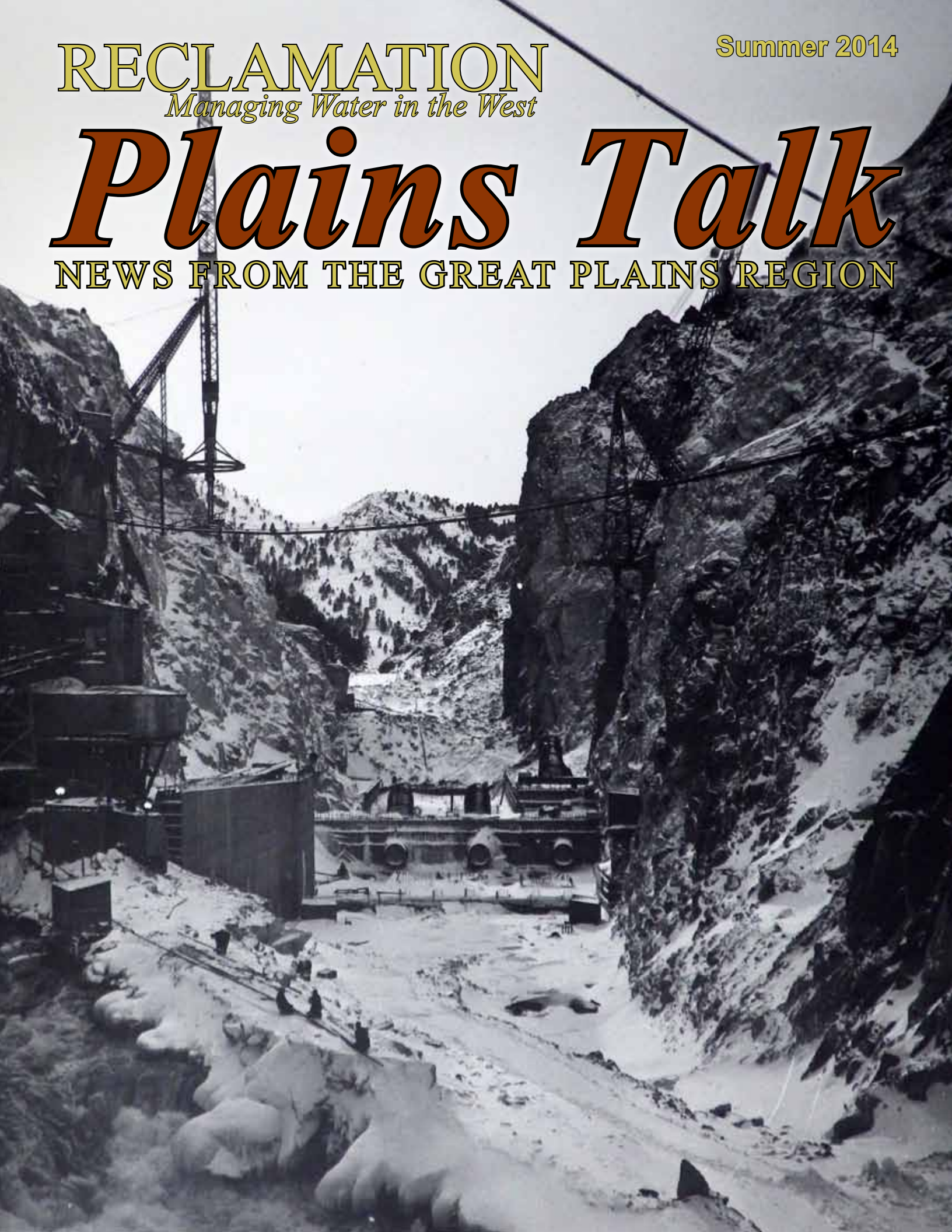
RECLAMATION

Managing Water in the West

Summer 2014

Plains Talk

NEWS FROM THE GREAT PLAINS REGION



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NOT YOUR GRANDDADDY'S RIVER

Seminoe Dam and Power Plant Construction.

By Dale Bohren

Looking at the North Platte as it flows through Casper, it appears to be a classic river, meandering through town, providing drinking and agricultural irrigation water plus a world-class fishery. But the fact is, in the not too distant past the Platte was a flood in the spring and nearly dry six months of the year.

The river has evolved dramatically, as has society, since a newly-created Bureau of Reclamation began construction on the first dam on the Platte in 1904.

John Lawson, the Wyoming area manager of the Bureau of Reclamation for 23 years until his retirement in 2011, explained how the uses and demands on the river changed at the same time as the social structure of the country.

"We started moving from basically almost a third world country ... to where we've evolved today."

Society changes equal river changes

"We started moving from basically almost a third world country, as we would think about third world country today, just a little over 100 years ago, to where we've evolved today … the nation's values have changed so dramatically," he said.

Lawson explained that 100 years ago, people in Wyoming were focused on surviving, trying to make a living, largely in agriculture and ranching. A major problem was that farmers would plant crops that came up well in May, but burned up in July if there was any lack of moisture. That highlighted the life or death importance of having water regulation and storage in this arid region.

Society, he said, has evolved now to the point where one of the great factors that matters is the value of fisheries, wildlife habitat and other recreation.

"I'll tell you, when the Pathfinder was built, there weren't any motorboats. The only fishermen were those workers trying to survive getting food. So it's an interesting story when it starts evolving," he said, and added that no matter the evolution, the most important factor in the evolution has always been water.

Beginnings of Reclamation are in Wyoming

The Bureau of Reclamation (BuRec) was formed in 17 western states in 1902 because, Lawson said, President Teddy Roosevelt, who had a strong desire to develop the West, knew that without a good, strong, reliable water supply, development wouldn't be possible. Today, BuRec's operations continue in those same 17 states where they operate dams for multiple uses.

One of the first BuRec projects was Pathfinder Dam. In 1903, engineers first considered to dam the Sweetwater River at Devil's Gate, but moved to the present day site on the North Platte right below the confluence of the Sweetwater.

"It still captured all the benefits of the Sweetwater, but it just made more sense. It really did" Lawson said.

Pathfinder

Pathfinder Dam was completed in 1909, storing more than one million acre feet of water. Contracts were signed to use that water for irrigation of 335,000 acres in 13 irrigation districts. Nine of those districts are in Nebraska and four of them are in Wyoming.

Guernsey

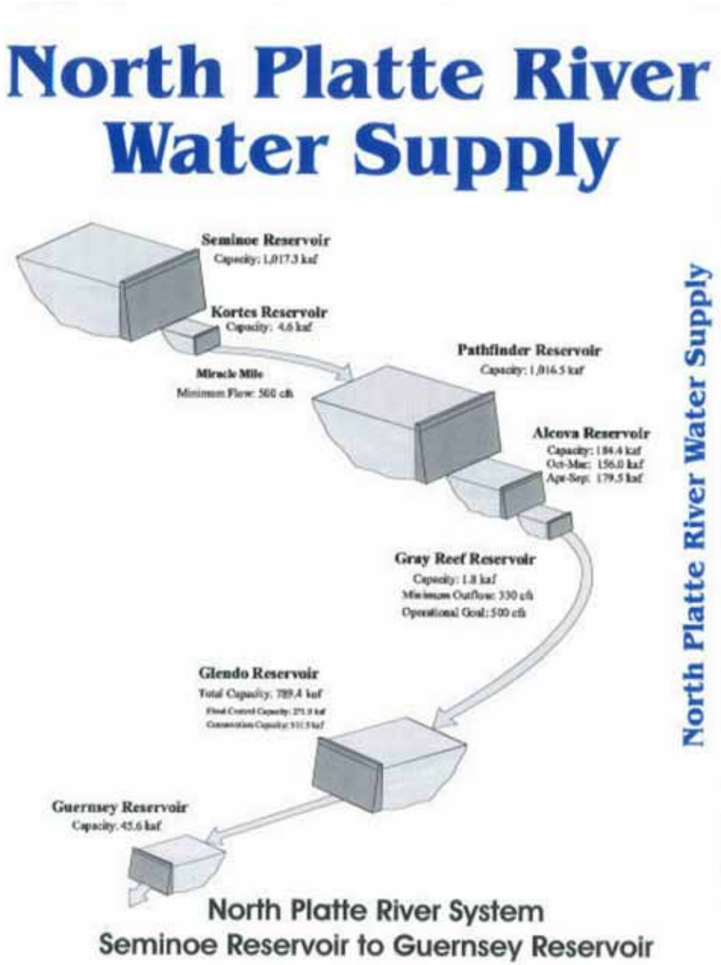
After construction of Pathfinder, a need for some kind of regulation downstream during the irrigation season was recognized, and construction of the 77,000-acre-foot Guernsey Dam and Reservoir was finished in 1928.

"It's a much smaller dam with much smaller capacity," Lawson said. "But what it allowed operations to do was to not only add additional water to the system, but during the summer when releasing high volumes of water down the river, it served to regulate the outflow down at the far end of the state."

BuRec was now able to capture a significant gain in water from streams and other runoff between Pathfinder and Guernsey.

Hydro power

Guernsey Reservoir also introduced a second purpose to river dams: hydropower. And the same turbines installed more than 85 years ago are still in service. Lawson said the windings have been rewound and the turbines have



A detail of dams and capacities on the North Platte River in Wyoming.

Looking upstream at a future Pathfinder Dam site, 1904.

been worked on, but the original power plant is still producing electricity.

According to Lawson, electricity became a growth business as the Rural Electric Association began distributing electricity across the rural west, having a significant impact on economic development and the lifestyles of citizens.

Seminoe

Shortly thereafter came another major reservoir, Seminoe, that was completed in 1934 upriver from Pathfinder. Seminoe, at 1,017,000 acre feet, is for all practical purposes very close to Pathfinder's storage capacity. But Seminoe, like Guernsey, employed hydropower. And it was different than the other dams in that it stored water exclusively for about 23,000 acres of Wyoming irrigation.

Alcova

Alcova reservoir was constructed at the same time as Seminoe, not to store water, but to distribute it.

"(Alcova) is actually a rather large diversion dam," Lawson said.

Behind the dam, nearly 200,000 acre feet of water is used to raise the water elevation approximately 160 feet to supply an irrigation canal that gravity-feeds agricultural fields more than 60 miles towards Casper.

"Now back in the '30s, they analyzed it and it was actually cheaper [than pumping] to build that big dam and raise the water up so you could, when you released water out of Seminoe and brought it down river, float it across Alcova into a gravity canal," Lawson said.

The gravity fed canal near Sandy Beach feeds water all the way to the airport.

"And it's all done by gravity," Lawson said. "It's all downhill. But the only way to get it downhill was to first get that water elevated that high." Because the irrigation water comes off the top of the reservoir, Alcova must be maintained, without fluctuations, within one foot of capacity throughout the irrigation season.

"So everybody kind of thinks of Alcova never gets affected. Well, basically the water that's in there … was never intended to be delivered, it was intended to be there to be able to get the real water … the actual water supply … which is Seminoe releases, into the [irrigation] canal."

The water level at Alcova is lowered 10 feet each winter to keep ice away from the head gate of the irrigation diversion structure and protect it. "Everybody thinks they do that so people can work on their boat docks," Lawson chuckled.

Guernsey Power Plant excavation, 1926.

"But that's not really the reason."

Water right variables

Seminoe and Pathfinder each hold more than one million acre feet of irrigation water. But Seminoe serves only 23,000 acres while Pathfinder serves 335,000 acres in multiple states. This is because Pathfinder enjoys a 1904 water right; Seminoe has a 1931 water right. Pathfinder fills and drains first and some years, Seminoe never fills and must rely on water stored seven years previously to fulfill its irrigation obligations.

But this doesn't mean water in Seminoe has no value until the water in Pathfinder is satisfied. Record keepers track ownership of all the water, including evaporation. From an ownership standpoint, at any one time there could be Pathfinder ownership in Seminoe and/or Pathfinder ownership in Glendo. BuRec managers try to store water as high as possible so, for example, additional electricity can be generated as water moves down the system. This also allows BuRec to maintain minimum flows.

In a good water year, both Pathfinder and then Seminoe will fill. Once water is stored under a storage water right, it belongs to that right for as long as they can keep it stored or until it's delivered or evaporates.

This is different from a natural-flow right such as that owned by the former Amoco Refinery or municipal water systems where they have a right to draw water. But once it flows by, their right has been served.

Peaking power

In the early 1940s with two of four river dams generating electricity into an ever-expanding market, BuRec discovered "peaking power" where electricity was generated as needed, mostly in the morning and evenings. Lawson said because society was changing, more and more couples started working and demand went down in the middle of the day. So then did generation.

Kortes Dam construction overtopped by flood, June 27, 1949.

Kortes Dam under construction, 1950.

Kortes

In 1941 a small dam was constructed between Seminoe and Pathfinder. Kortes was authorized to optimize peaking power. Built in an ideal place for a reservoir — a canyon below Seminoe — Kortes holds a maximum of 6,000 acre feet of water.

"So it absolutely has very little value for any storage of water," Lawson said. But with one million acre feet of storage directly above in Seminoe, Kortes was authorized for a single purpose: to raise water elevation up so it could provide falling water to drive turbines to generate electricity.

Minimum flows

But the little Kortes Dam taught BuRec a bigger lesson; with another reservoir downstream to catch the water, they could run high flows for a number of hours and generate a lot of power and then turn it off but keep river flows fairly consistent throughout the

day, but with consistent flows in that stretch of the river fishing improved.

"It was unintentional," Lawson said. "It was not an authorized purpose We started developing a fishery unintentionally. Then all of a sudden they would start seeing these flows reduced almost to nothing, having an adverse effect on the fisheries."

Legislation known as the Miracle Mile legislation in 1971 required a minimum release of 500 cubic feet per second to avoid dramatic reductions in river flow between Kortes and Pathfinder.

Glendo Dam.

Unintended result: trout fishery

Minimum flows in the Miracle Mile created a sample of the fisheries possible on the North Platte.

"The fisheries we see today wouldn't be here if it wasn't for the reservoirs. Maybe a different fishery, but it wouldn't be the trout fishery." Lawson said the North Platte trout habitat is the result of the dams and the cold water being released from the bottom of the reservoirs.

Glendo, Fremont Power Plant and Gray Reef

In the late 1950s, the Glendo unit, which included Glendo Reservoir, Gray Reef dam and the Fremont Power Plant, was constructed under federal legislation allowing for multi-purpose projects. These included for the first time flood control, hydropower, irrigation, municipal water, fish, wildlife habitat and recreation. Glendo, which is a multiple-use project, became the only North Platte project of all the reservoirs to include flood control capacity.

A 17-foot-diameter underground tunnel, four miles through granite that Lawson said one could drive a bus through, was mined to deliver Pathfinder water to the Fremont Canyon Power Plant at the head of Fremont Canyon above Alcova Reservoir. This left that stretch of river, known as the Cardwell Access, nearly dry.

Up until this time, when the irrigation season was over Sept. 30, the river was basically shut off and wouldn't flow until around May 1.

"Irrigation was done," Lawson said. And there was no place to store the water without losing it.

But Gray Reef, a new, small dam below Alcova completed in 1961, was able to provide river flow equalization much like Kortes. Combined with excess capacity in Glendo, in which Pathfinder water could be restored if necessary, Gray Reef allowed BuRec to smooth the river's flow so they could generate electricity even in winter, where uneven flows caused dangerous problems with ice. The minimum flow avoided the icing problems and inadvertently created another stretch of valuable trout fishery.

"You won't find that in the legislation, but it turned out that way," Lawson said.

There was another major bonus with the addition of Gray Reef's minimum flows: pollution abatement.

Pollution abatement

"We never made any releases the whole winter. So you can imagine, particularly what Casper was dealing with in regard to what they were going to have to do to clean up their [sewage] discharges, because one person's waste is another person's water supply, and still is," Lawson said. "There was also the aspect of the oil and the Amoco refinery. So they federally authorized this [minimum flow between Gray Reef through Casper to Glendo], just like Kortes but for different reasons."

Lawson said there was significant social change occurring in the early '60s with respect to water priorities in the west. The BuRec began rebalancing its efforts, he said, not walking away from their original missions of supplying irrigation and hydropower, but addressing new laws like the National Environmental Policy Act and the Endangered Species Act.

Partnerships

Lawson came to Casper in 1989.

"I had the privilege of inheriting this fabulous system," he told the Casper Journal. With construction of the system completed to a point no new dams made any sense, Lawson began developing relationships with other interests. One of these was with Bill Wichers, fisheries supervisor of the Wyoming Game and Fish.

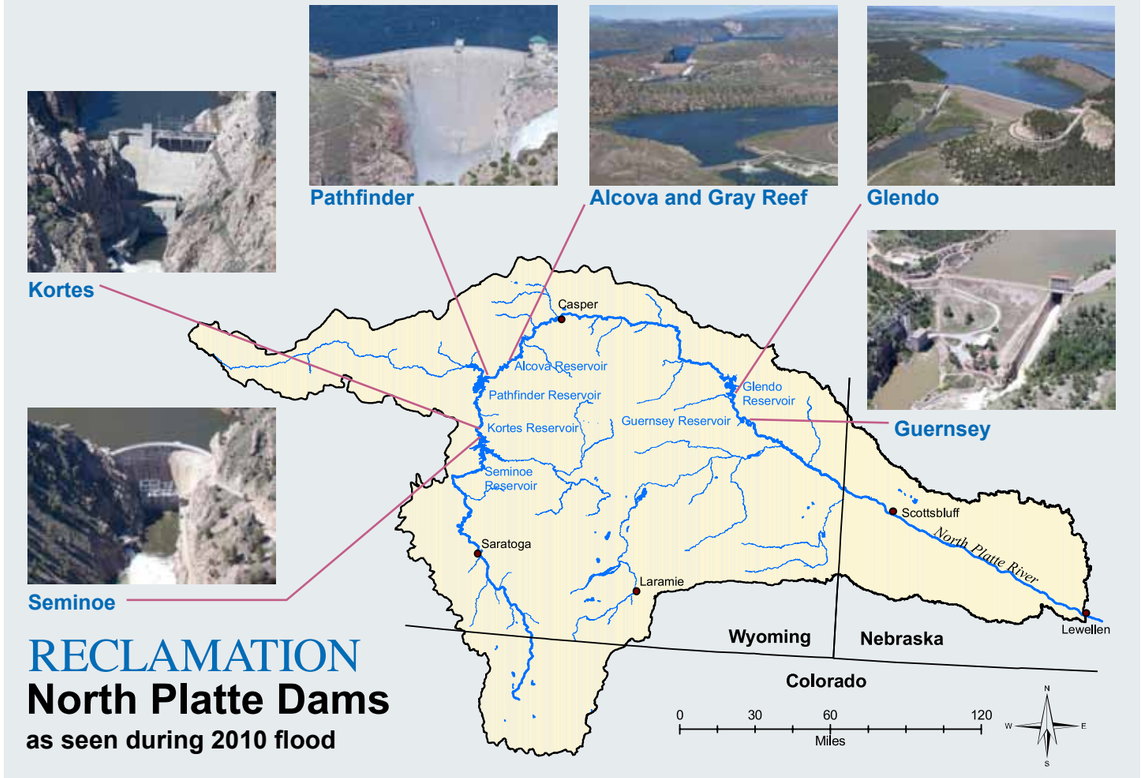
"We started talking about things we could do, and one of the very first things we looked at we now call flushing flows."

A flushing flow is exactly what it sounds like. The BuRec releases a large amount of water, slows the release, and repeats. This washes sediment from the gravels that make up the river bed to improve fish egg habitat and hatching by allowing more oxygen to percolate through the gravel. Lawson began flushing flows in 1993.

Lawson also found partners to restore river flow and create a fishery through the Cardwell Ranch between Pathfinder and Fremont Canyon. "That too was a 'we, not I' project," he said.

Today there's a year-round minimum flow on the North Platte River from Seminoe to the Guernsey Reservoir.

"You would think that there was a grand plan," Lawson laughed, "but there was no grand plan. It just turned out well and continues to change and improve."



The Lower Yellowstone

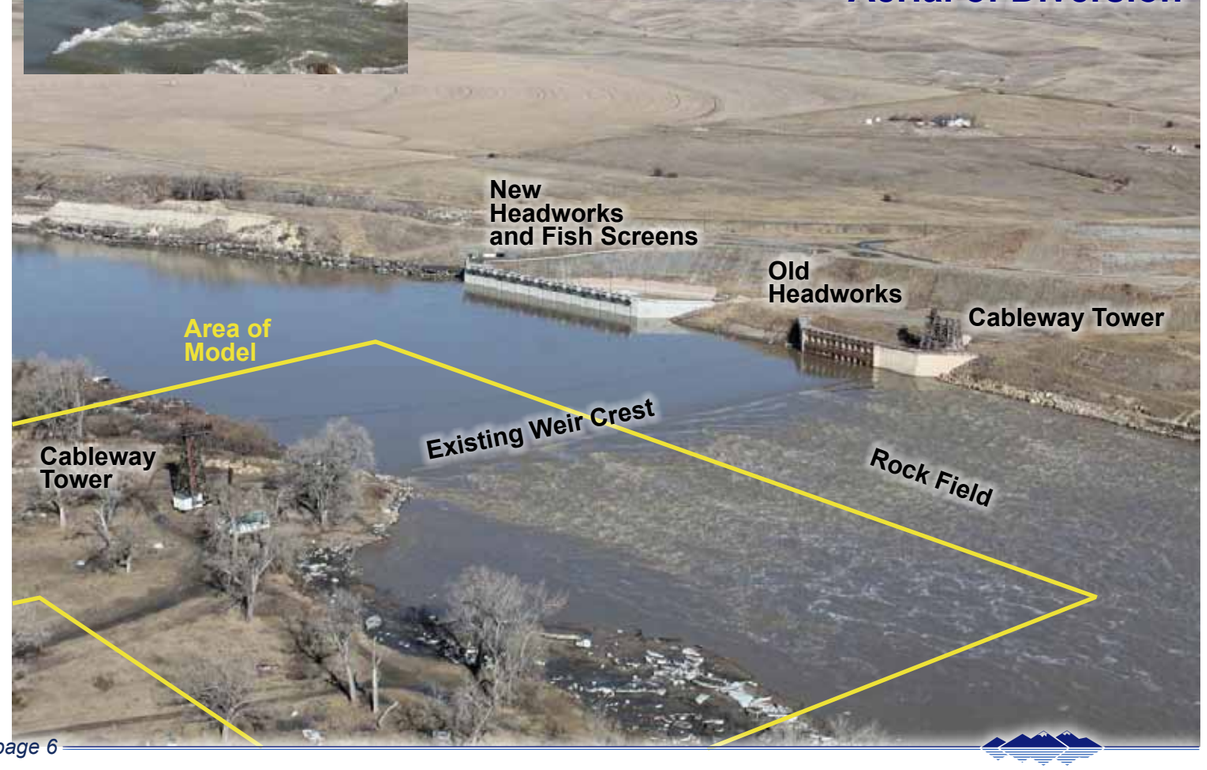
Denver Lab Models the Preferred Alternative for Improving Fish Passage

The Lower Yellowstone Project is one of Reclamation's oldest irrigation developments. Contemporary concerns for the ability of the pallid sturgeon to migrate past the weir and avoid entrainment in the irrigation canal system has led to modification of the diversion.

Reclamation, the Corps of Engineers and other partners have studied the Yellowstone River and the diversion structures to alleviate the problem and assure future water deliveries to 54,000 irrigated acres. A new diversion headworks with fish screens was recently completed to limit the loss of fish. Solving the fish passage at the weir remains. The preferred alternative for this is to construct a bypass channel to allow sturgeon to avoid the weir completely.

2011 record flows on the river damaged the rock crest of the dam and highlighted an eddy on the bank of the river where the proposed bypass channel would reenter the river below the dam. Rock was added to the dam to repair the damage.

Adding Rock



Aerial of Diversion

Denver Lab Model

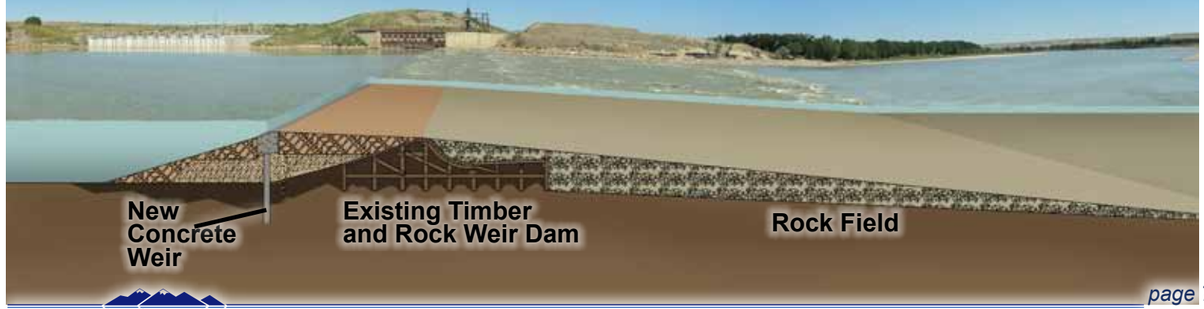
The Denver Lab investigated river hydraulics for the proposed bypass channel using a model to simulate flows from 7,000 to 60,000 cfs.

This was done to demonstrate how the bypass channel could be designed to limit the eddy and potential adverse impacts to migrating sturgeon.

The Denver Lab team for creating the scale model and studying the impact of different flows consisted of:

Dale Lentz P.E. - Principle investigator
Kylie Fink - Team member
Rudy Campbell - Draftsman
Jason Black - Model maker
Jimmy Hastings - Model maker
Marty Poos - Model maker
Dane Cheek - Model maker

Corps of Engineers Cutaway Drawing



WYAO Focuses on Safety Improvements

Asbestos floor tile mastic is cleaned up after tiles are removed.

By Jay Dallman, WYAO

Beginning in 2013, and continuing into 2014, the Wyoming Area Office (WYAO) has worked with a private contractor to remove asbestos containing material (ACM) from our power plants, administration buildings, and other structures.

Asbestos is a name which applies to a group of naturally occurring silicate minerals which all have long, thin fibrous crystals. Manufacturers and builders favored using asbestos because of its desirable physical properties: good sound absorption, relatively high tensile strength, resistance to fire, heat, electrical and chemical damage; and because it was cheap and readily available. It was used in such applications as insulation on electrical wiring, piping, heating ducts and floor coverings.

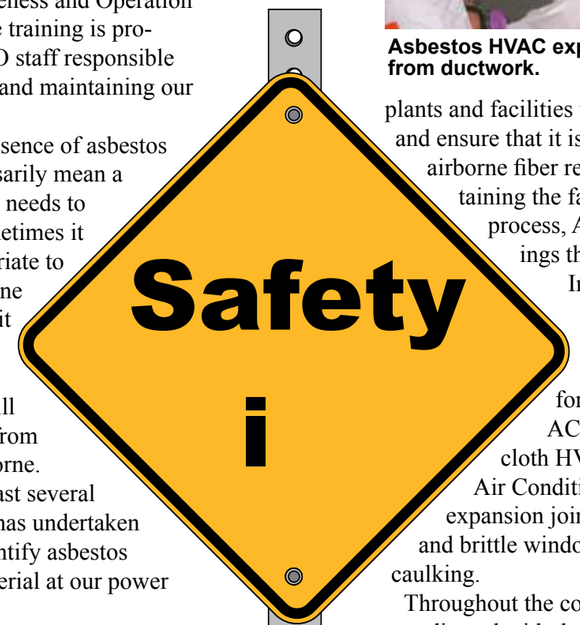
Asbestos serves many useful purposes, however, if the mineral is disturbed by nearly any kind of fabrication process, or abraded through some sort of physical wear, the fibers readily break into tiny fragments which become airborne and can easily be inhaled which can lead to serious illnesses, including malignant lung cancer, mesothelioma, and asbestosis.

Almost all of Reclamation's structures and facilities were constructed prior to the promulgation of Occupational Safety and Health Act (OSHA) regulations and before the dangers of asbestos were widely known.

To assist WYAO staff to safely work around and handle ACM, Asbestos Awareness and Operation & Maintenance training is provided to WYAO staff responsible for working in and maintaining our facilities.

The mere presence of asbestos does not necessarily mean a building owner needs to remove it. Sometimes it may be appropriate to just leave it alone or encapsulate it with some sort of protective finish which will prevent fibers from becoming airborne.

During the past several years, WYAO has undertaken an effort to identify asbestos containing material at our power plants and facilities to become aware of its location and ensure that it is handled appropriately to prevent airborne fiber release during the course of maintaining the facilities. Through the inspection process, ACM was found in several buildings throughout the Wyoming Area.



Low odor solvent is used to remove tile mastic from subfloor.

Asbestos HVAC expansion joint cloth is removed from ductwork.

Contractor cuts away asbestos joint fabric that has been stabilized with tape.

In 2013, WYAO entered into a contract with an accredited asbestos abatement contractor to remove ACM which had been identified for removal.

ACM removal included floor tile, cloth HVAC (Heating, Ventilating and Air Conditioning) duct expansion joints, and cracked and brittle window glazing and caulking.

Throughout the contract, our office coordinated with the contractor and our O&M staff to ensure continuity of operations during the ACM removal process. Many of the facilities had asbestos floor tile. Furniture and stored items were removed so that the asbestos floor tile could be removed. When removing HVAC expansion joint cloths in the control center, the HVAC system was shut down for three days while the contractor worked and air samples were taken.

While removal of the asbestos temporarily disrupted working conditions, staff members were cooperative and innovative in making sure work was accomplished as the abatement activities progressed. Asbestos removal under the contract has proceeded on schedule and is anticipated to be completed by December 2014.

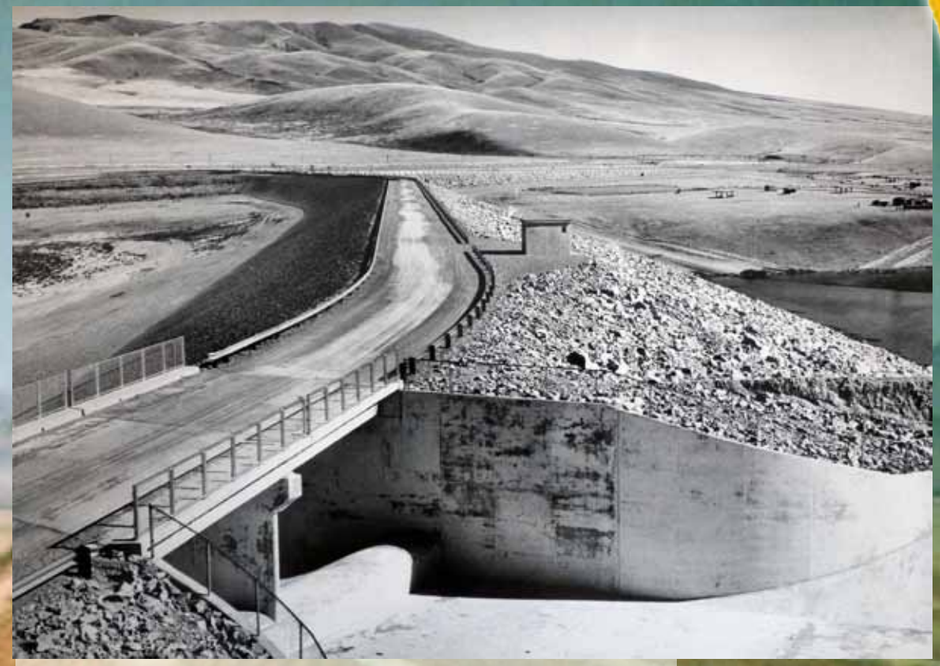
Although comprehensive air testing has not been completed, situational air sampling has shown that airborne asbestos has been below the OSHA permissible exposure limit (PEL), and usually at the non-detect level.

WYAO's approach to asbestos going forward will be to manage ACM in place and to remove those materials, as needed, on a case-by-case basis.

Contractor uses *Samurai* tile removal tool to separate asbestos tiles.

50 Years Ago

Clark Canyon Dam and the East Bench Unit



Clark Canyon Dam looking east as seen following completion.

Background image: First year of irrigation with a barley crop of 60 bushels per acre.

Placement of concrete in the stilling basin slab, August 1963.

Construction of the East Bench Unit of the Pick-Sloan Missouri Basin Project began in earnest in 1960 after funds were appropriated. Some of the first contracts awarded were for the relocation of communication, railroad and highway lines that would be inundated by the reservoir.

More than 15 miles of Union Pacific Railroad line had to be relocated before construction of the dam. The town of Armstead, located along the original rail line, would be abandoned before the reservoir filled.

October 1, 1961, commemorated the start of construction for Clark Canyon dam. Commissioner Floyd E. Dominy, Senator Lee Metcalf, Representative Arnold Olson and Montana Governor Donald Nutter spoke, followed by a ceremonial explosion in the left abutment area of the dam.

(continued, next page)

LeTourneau-Westinghouse tandem scraper and International pusher in the borrow area loading fill for the dam.

1964-2014

Clark Canyon Dam Continued:

Clark Canyon Dam under construction, October 1962.

Barretts Diversion Dam and major canals began in 1962 with ice jams threatening progress during the winter. Dynamite was used to break them up before construction flooded.

Dignitaries dedicated the dam on September 20, 1964. About 3,000 people attended, including representatives from Federal, state, local government, and private organizations. Senator Lee Metcalf delivered the keynote speech praising the water project, as did the other speakers. William F. Cashmore, former state senator from Lewis and Clark County, noted that the project was an example "of cooperation between levels of government and people themselves," while Parke Scott of the inundated town of Armstead stated that citizens of the town did not fight to save it because "the dam represented progress and we have never fought progress."

Bill McCormick, a retired Reclamation engineer who worked constructing the East Bench Unit, recently called the Regional Office to inquire about the East Bench anniversary.

"We tend to forget what a big deal these projects were when we constructed them," McCormick said. "There was immense interest in the promise of a better future for residents of the area."

Bill said that after the completion of Clark Canyon he was scheduled to move to Colorado for building the Fryingpan-Arkansas Project. The weather had other plans: June 1964 marked a record flood in Montana and Bill was reassigned as the engineer to rebuild Swift Dam, a BIA structure that failed on the Blackfeet Indian Reservation.

Following his work at Swift Dam, Bill served as the Construction Engineer for the Mount Elbert Power Plant in Colorado and then for the modification of Buffalo Bill Dam before retiring in Cody, Wyoming.

Drought-Proofing Texas through Desalination

Lake Meredith, 2014 Texas Drought.

By Kim Parish, OTAO

Many parts of Texas are still reeling from the 2011 drought, one of the worst in state history, which left several reservoirs all but completely dry.

The primary message of the 2012 Texas State Water Plan is a simple one: in serious drought conditions, Texas does not and will not have enough water to meet the needs of its people, businesses, and agricultural enterprises.

Surface water reservoirs, although important tools, have proven to be unreliable during critical drought periods – which is why Texans are looking beneath their feet at the abundant amount of brackish groundwater to help withstand the next drought.

Staff at Reclamation's Oklahoma-Texas Area Office are playing an important part in this strategy.

Although Texas has constructed 34 brackish groundwater desalination facilities across the state, more are on the way – a lot more.

But important questions still remain, like how much will it cost in terms of construction and O&M? And how can we optimize and use the best technologies to keep costs down?

To answer these questions, Reclamation is partnering with the Texas Water Development Board to develop predictive tools that assess future costs and evaluate the appropriate applications of existing technologies.

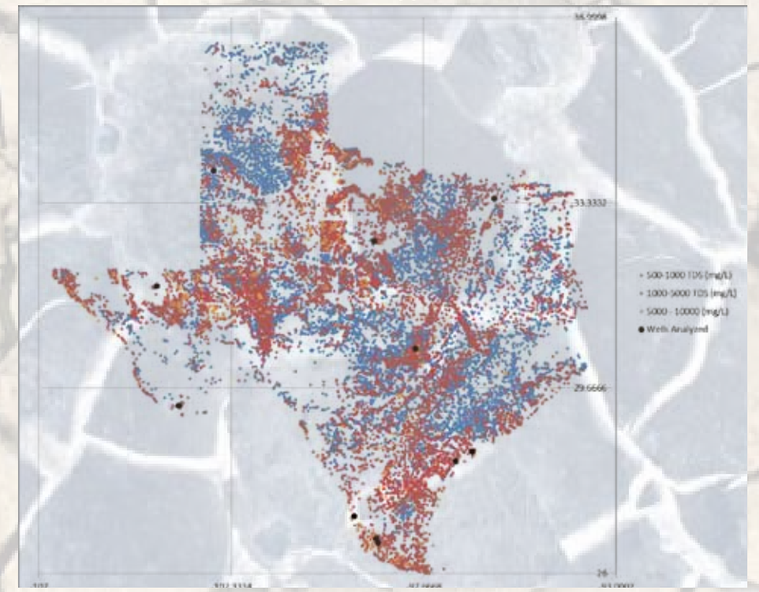
Using site-specific data on existing Texas brackish groundwater desalination plants, Reclamation staff are evaluating whether cost curves can be developed to estimate future plant costs in Texas, including things like well fields, plant construction, waste disposal, and energy needs.

The hope is that water managers can quickly get an idea on how much brackish desalination is going to cost relative to more traditional supply options like importation or new reservoir construction.

A second study is evaluating the trade-offs of using different technologies to optimize treatment of brackish groundwater sources in Texas. Reclamation staff are using groundwater quality data and commercially available software models to categorize groundwater by quality and to predict which treatment technologies will perform the best and where.

Both of these studies are good examples of how leveraging state and Federal resources can help advance important local issues – in this case -- ensuring more Texans enjoy drought-proof water supplies in the future.

Location of groundwater wells in Texas with low, medium, and high Total Dissolved Solid levels - used to categorize which and where desalination treatment technologies may be applied in Texas.



Bismarck Water Festival Sets New Record

By Patience Hurley, DKAO

A new record was set this year at the annual Bismarck 3rd Grade Water Festival, with more than 400 students participating.

Third grade students from across Bismarck came to the Jack Science Center on the campus of Bismarck State College, and experienced a full day of learning about water.

Presentations ranged from *Animals of the Wetlands*, to, *Those Darn Dams*. In addition to Reclamation staff, presenters came from State, local and Federal water agencies to teach students about their agency's mission and the importance of water stewardship.

Presenters from DKAO included Walt Fairbanks, Jeanne Scheffler and Patience Hurley. These three took turns talking about how and why dams were built in the Dakotas, and helped the students become more familiar with Reclamation.

Students from Bismarck's Northridge Elementary School prepare to build an earthen dam during the annual Bismarck 3rd Grade Water Festival.

After a brief interactive presentation, the students got busy constructing either an "earthen" dam or an "arch" dam out of clay and a modified milk carton.

Once they were confident their dam was well built and would pass the stringent "safety of dams" test, students brought their projects forward to have water poured into the modified milk carton to see if their dam would hold water back and create a reservoir.

While not everyone passed the "test," students left the presentation with a good sense of Reclamation's mission and an awareness of what goes into building a dam and the benefits realized from the dams in the Dakotas.

Jeanne Scheffler helps students test their dam by creating a "reservoir."

Students constructed earthen and arch dams using clay and modified milk cartons.

Project Highlight: Bostwick Division

LEFT: Lovewell Reservoir, located seven miles south of Superior, Nebraska. RIGHT: Superior Courtland Diversion Dam, located upstream of Lovewell Dam and Reservoir, supplies irrigation water for approximately 64,000 acres in Nebraska and Kansas.

Located in south-central Nebraska,. and north-central Kansas, the Bostwick Project controls the waters of the Republican River.

Prior to construction, life in the Republican Valley was very different.

During the late 1800s and early 1900s, residents battled floods, droughts and insects.

These tribulations and intervals of economic depression contributed to the difficulty of early settlement.

A major flood occurred in 1935, taking the lives of 110 people and causing more than $9 million in damage.

As a result, the residents expanded efforts to develop, control, and improve the land and water resources.

Features of the Bostwick Division include Harlan County Dam and Lake on the Republican River, Lovewell Dam and Reservoir on White Rock Creek, one existing and one proposed diversion dam, six pumping plants, and the canals, laterals, and drains necessary to serve 104,240 irrigable acres.

The reservoir, lake, and surrounding lands of the division provide benefits for flood control, irrigation, sediment control, fish and wildlife enhancement, and recreation.

"The water supply of the

Lovewell Dam and Reservoir.

Republican River is allocated to the States of Colorado, Nebraska and Kansas through the Compact the states agreed to and approved by Congress in 1943," said Nebraska Kansas Area Manager Aaron Thompson.

"The greater part of the project works has been completed, but the Scandia Unit has not been constructed."

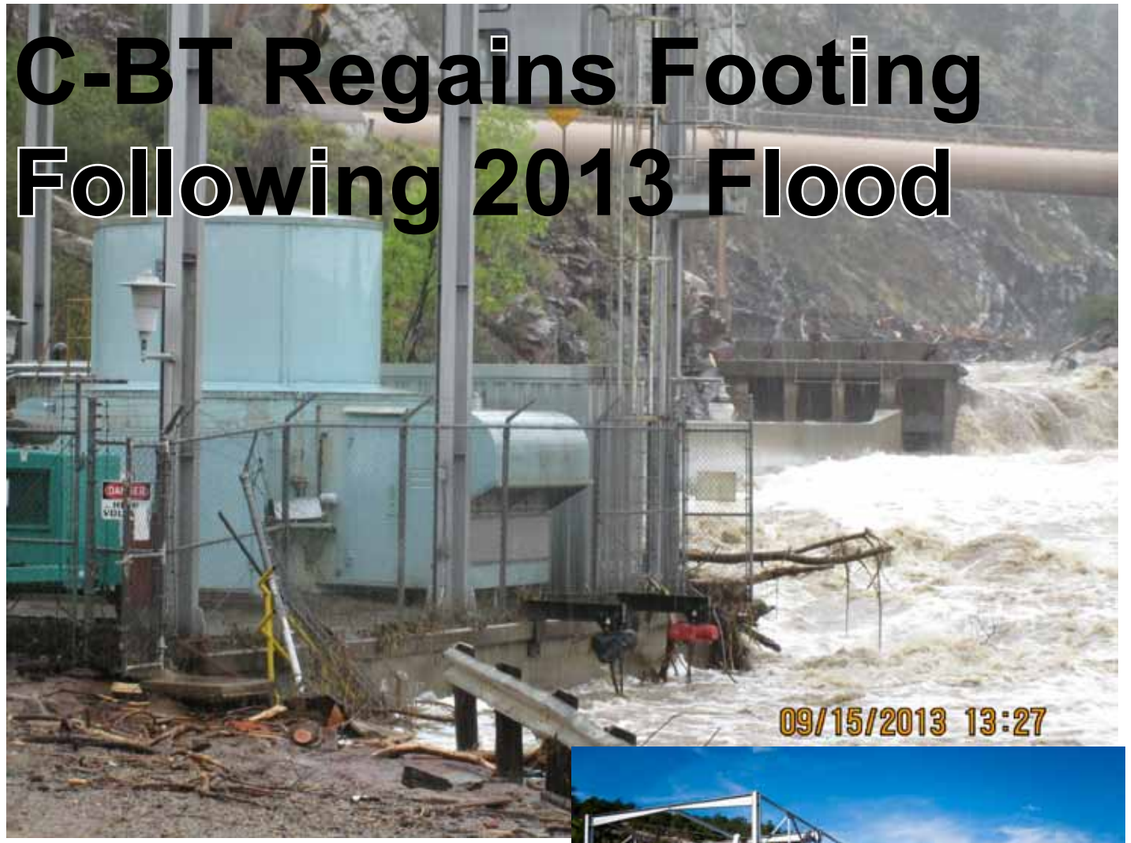
The Republican River valley is characterized by wide, flat flood plains and bench-like alluvial terraces.

The climate ranges from dry sub-humid in the western region of the project area to wet sub-humid to the east with annual precipitation varying sixteen to twenty-five inches. Blanketed with mixed prairie grasses, the rolling landscape is bisected by valleys of flood plain forest and savanna including freshwater marshes.

The Republican River is formed by the confluence of the North Fork Republican River and the Arikaree River just north of Haigler in Dundy County, Neb. It joins the South Fork Republican River southeast of Benkelman. All three tributaries originate in northeastern Colo.

Today, the Republican River Basin is home to more than 92,000 people. Water issues and increasingly high demand still continue in the Republican River Basin, but there are many working to ensure that water resources in the Republican Valley last for many years to come.

C-BT Regains Footing Following 2013 Flood



By Kara Lamb and Pat McCusker, ECAO

While the majority of the Colorado-Big Thompson Project facilities in Eastern Colorado weathered the September 2013 flood well, two features located at the mouth of the Big Thompson Canyon were particularly hard hit.

Work to fully restore service to both the Dille Diversion Dam and the Big Thompson Power plant has been on-going since fall 2013.

It took several months for water to recede to normal levels in the river. Then it took several more weeks to gain environmental compliance and landowner approved access to the river channel.

Once access was granted, work began in late February. Heavy equipment was on scene by March.

This pictorial essay chronicles the progress to-date at the Big Thompson Power plant, as captured in photos by Patrick McCusker of the ECAO.

TOP LEFT: The Big Thompson Power Plant, a seasonally operated plant on the Colorado-Big Thompson Project, sits at the mouth of the Big Thompson Canyon and saw significant flooding in the Colorado floods of September 2013. At this part of the river, fall flows are typically around 100 cfs. On September 13, they peaked between 19,000 and 29,000 cfs. The small delta of the river broadened from 30 feet across to 300.

TOP RIGHT: On September 16, Reclamation photographer, Andy Pernick, was able to photograph the Big Thompson Power Plant on the first day of sun after the rain and flooding had subsided. Flows in the river were still extremely high.

By April 14, the small afterbay was complete and work had begun on restoring the main channel of the river, which had been rerouted by the flood.

Crews begin work removing the 10-18 feet of sediment deposited across the mouth of the Big Thompson Canyon.

By May 14, the river channel, river banks, power plant tail race and small afterbay were rechannelled, reconnected and ready for spring snowmelt runoff.

Ready, Aim, Shoot!

OTAO Hosts Successful CAST Event at Lake Bastrop

"You make a living by what you get. You make a life by what you give."

(LEFT to RIGHT) Graham Robinson, Logan Robinson, and Capt. Jim.

By Kim Parish, OTAO

The 10th annual CAST / Let's Move Outside event held in Bastrop, TX kicked off on May 3, 2014, with beautiful weather.

Thirty-nine anglers volunteered their time and their watercraft were lined up at the docks bright and early Saturday morning, as they prepared to drop their boats in the calm waters of Lake Bastrop.

Participants began arriving and the excitement in the air was a joy to hear. This year brought many new boat captains and new participants which always adds a little extra enthusiasm to the event.

Captain Nathan and Devin reel in two nice ones.

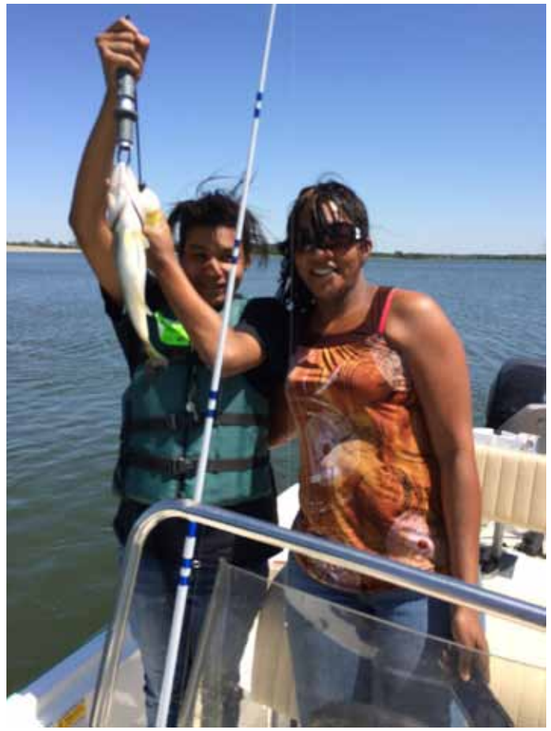
ABOVE: David with his catch of the day, along with his buddies Katelynn, James, and OTAO Area Manager, Mark Trevino. Right, Krystal shows off her catch of the day.

In an effort to help promote First Lady, Michelle Obama's "Let's Move Outside" initiative this year's participants were each given two free passes to the park at Lake Bastrop.

Participants also received a backpack of their choice filled with goodies such as Frisbees, flashlights, coloring books and bluebonnet seeds, in addition to their fishing poles and tackle boxes.

A local women's fishing club set up a fishing game where participants threw a fishing line over the wall and pulled back a prize. It was definitely a hit. The a cappella choir from the University of Texas, *One Note Stand*, showcased their vocal talents.

Participants were also entertained by Reclamation's own Otto Otter as well as by a couple of his friends from LCRA, the deer, the raccoon and the skunk. Of special note, boat captains and participants signed a t-shirt for a young lady who has attended our event for the past nine years, and could not make it this year due to surgery. She was so disappointed but the signed t-shirt will be a welcome surprise.



If you have ever served as a volunteer for this or any other cause, then you know the overwhelming sense of satisfaction received from such a small act.

Volunteering makes a difference in the lives of both the giver and the receiver. Winston Churchill said it best, "You make a living by what you get. You make a life by what you give."

UPPER LEFT: David with his catch of the day, along with his buddies Katelynn and James. BELOW: Otto Otter and his friends from Lower Colorado River Authority entertain the crowd.

New Boat Ramp Installed at Okie Beach

Thickended-edge rebar preparation on upper portion of new ramp. Lower right, rebar cages await placement.

By Jay Dallman, WYAO

Natrona County Parks (NCP) contracted with Andreen Hunt Construction (AH) for renovations to the Okie Beach recreation area, in accordance with the July 2012 resource management plan.

The centerpiece of renovations was the construction of a new 55' x 135' thickened-edge double ramp, consolidating two nearby boat launching facilities into a single location.

Rebar placement underway in upper portion of the boat ramp.

Okie Beach is a recreation area on the northwest shore of Lake Alcova in southeastern Wyoming. Alcova is a Bureau of Reclamation reservoir primarily used for delivery of irrigation water. NCP manages the Reclamation surface waters around the reservoir for recreation.

The new ramp replaces the older, deteriorated ramps, while at the same time providing the added ability to accommodate boat launching in the offseason by extending further into the reservoir.

The boat ramp construction was made easier as a result of a cooperative effort between Reclamation and our managing partner.

Normally, Reclamation lowers the reservoir 10 feet following the end of irrigation season. Last fall, NCP asked Reclamation to lower the reservoir an additional five feet so AH could tear out the old ramps and construct a new reinforced, thickened-edge concrete boat ramp that extends 25 feet beyond the winter shoreline. The new ramp is bounded by fixed docks salvaged from the old ramps.

Grading roads near boat ramp.

In addition to the fixed docks, the ramp will have a moveable dock for use in spring and fall when the reservoir is below the summer operating level.

The contractor built in a travelling cable system, very similar to the design used in some of the docks at Reclamation's Pathfinder Reservoir, just upstream. Each October, the Parks crew will unhook the cable inside a manhole, route the cable through the dock framework and re-anchor the cable. As the water recedes, this "dock on wheels" will travel down the ramp and float to its final resting place for safe and effective offseason boat launching, at least until the lake freezes over. The movable dock will be used again in the spring, as ice conditions allow, and then removed during the summer operating season.

The extra water released from Alcova Reservoir last fall to accommodate the boat ramp construction was restored downstream in Reclamation's Glendo Reservoir.

This past April, Alcova Reservoir was filled to its summer operating range by raising the water surface about six inches per day rather than the normal four-inch-per-day rate. So, our managing agency was able to upgrade one of their popular recreation areas without any adverse impacts to Reclamation's water operations.

Salvaged dock placement underway on finished ramp.

Casper Control Center

Plains Talk Tours Operations Center

Control Center Supervisor Ray Balerio talks with operators.

By Kara Lamb, ECAO, and Jay Dallman, WYAO

This spring, Plains Talk staff interviewed operators at the Casper Control Center to help employees across the Region get to know the CCC better. The following are excerpts from the resulting interview.

PT: ***What is the Casper Control Center and what does it do?***

Kathy Juarez-Woodruff, Control Center Operator: The Casper Control Center is located in Mills, Wyoming, and is an integral part of the Great Plains Region power and water systems. It is responsible for overall operation of power and water for twenty-two hydro power plants on five major river systems, covering three area offices - WYAO, MTAO and ECAO.

We've been in existence since 1974, providing comprehensive control of facilities from one central location. The CCC is manned 24 hours per day, allowing power plant crews to work 40-hour weeks, leaving the plants unmanned in the evenings, on weekends and holidays. Plant crews are called out by the CCC operators to respond to alarms at facilities.

Originally the CCC controlled and monitored the North Platte Project Facilities, eventually adding the responsibility of the Big Horn Basin Facilities, then Yellowtail and Canyon Ferry, and then the Colorado Big-Thompson Project.

PT: ***Although you cover operations in three states, the CCC is located in Wyoming. Why?***

Coleman Smith, Wyoming Area Office Manager: Wyoming is a sensible location for a centralized control facility because we centrally located.

PT: ***Does having the CCC in Wyoming mean it winds up providing more specific Wyoming-related work?***

Smith: The control center probably does more operations specific to Wyoming, but that has more to do with the fact that eleven of the twenty-two power plants are located in Wyoming.

PT: ***What are some of the benefits the Region derives from the CCC?***

Paulette Schaffer, Power Program Analyst: The CCC provides continuity of operations throughout all of our power facilities. It's a 24-hour point of contact for a lot of operational issues and our eye on the facilities. As a result, they are our first response to abnormal conditions at unstaffed plants. The only plant in the Region staffed 24-7 is the Mt. Elbert Power Plant. The rest rely on the CCC to keep an eye on them when they are not manned.

PT: ***What does a CCC operator do?***

Woodruff: A CCC operator works in conjunction with the power system dispatcher, water authorities, and Montrose power scheduling on a regular basis to assure all power and water needs are being met.

An operator prepares and directs switching operations to accomplish and issue clearances, hot-line orders, special conditions and general switching at all WYAO office facilities; monitors and tracks all of the above for MTAO and ECAO. Operators calculate and determine megawatt generation schedules for next day and real-time changes.

We also accomplishes appropriate system voltage and reactive control by operation of plant voltage regulators.

Operators handle system emergencies, testing and restore facilities to service following outages by controlling power plants loading and special control equipment for information on system conditions.

We take appropriate action to protect facilities and equipment to sustain or restore delivery of power and water while continuing to operate and monitor the rest of the facilities.

Operators report problems and failures to the System Dispatcher and facility personnel verbally and by completing interruption and unsatisfactory equipment reports.

Tim Miller, ECAO water scheduler for the Colorado-Big Thompson Project, smiles in front of the "eye in the sky" during a recent staff meeting and field visit to the CCC.

Control Center Operators, Rockie Hoskinson, left, and Steve Jenkins, right.

Hoskinson and Jenkins at the control console.

We receive requests for water releases from irrigation district representatives, Regional and Project personnel; and verify authority of those making requests.

Operators compute necessary changes in gate positions, make necessary gate position changes by centralized control, or ordering gate changes by manual control while communicating and working with ten irrigation districts.

We are also responsible for notifying the public in the form of call down lists of certain water changes.

Operators act as the primary reporting station for earthquakes in the region and follows appropriate written procedures.

We operate and monitor security system covering three area offices, which involves confirming personnel in and out of facilities during off hours, and writing reports of security violations.

Operators act as the primary contact for law enforcement for anything security related at all facilities.

We also respond to Dam Safety Emergency Action Plans and follow flow charts for proper action required when emergencies occur.

PT: ***That's a lot. Do you have a favorite part of the job?***

Woodruff: I have worked in the CCC for almost 14 years and have met many people that I proudly call my friends.

The camaraderie that I have with my coworkers is irreplaceable.

My favorite thing about working for Reclamation as a Casper Control Center Operator is the knowledge that the work we do is important.

There are never two days that are the same; which allows me to continually learn and grow in my job.

When I come to work I am part of a team; we work together to serve the public by providing electricity to the power grid, providing water to irrigators and recreationists, and controlling reservoir levels to provide recreation opportunities for the public.

PT: ***How would you describe your relationship with the CCC?***

Carlos Lora, Water Scheduler, Colorado-Big Thompson Project: We work together every day, seven days a week.

Basically, they get the water order from us and they follow that to run the system.

They run the system remotely from there. However, once in a while there is a question or something that needs to be tweaked a little bit. So, our communication with the CCC is daily to make sure everything continues running the way it is supposed to. It is a lot of coordination.

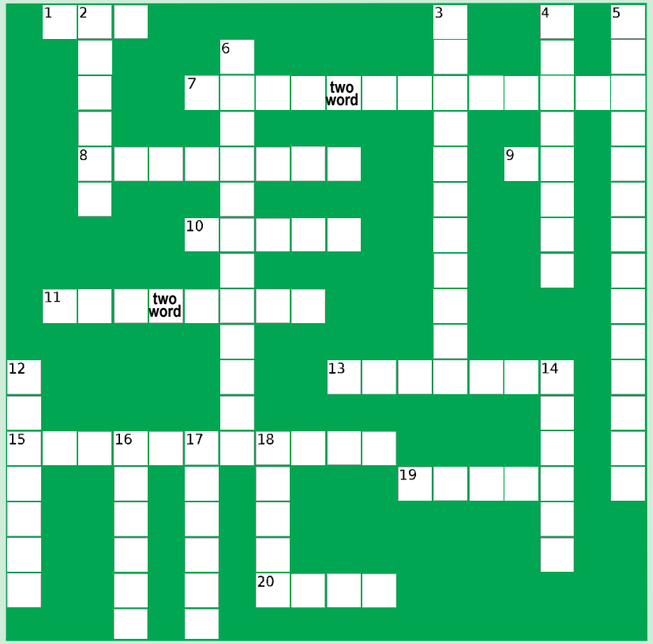
PT: ***Can you give a recent example of that coordination?***

Lora: Well, the most recent example is the flood we saw on the east side of the C-BT this past September. I had given Kathy specific information about operating the C-BT. She called me with heads up information of what she was seeing live -- and that's why things worked as well as they worked.

We kept sharing information and helping each other keep eyes on the entire project throughout the event. It was definitely a team effort.

PT: ***How is an operator at the CCC different than a water scheduler at the Area Office?***

Lora: They are our eyes 24/7. They are the drivers. The Area Office tells them where to go, but they are the ones who take us there.



Going Green Puzzle

Test Your Environmental Knowledge!

ACROSS

1. Plan, Do, Check, and Act are the four cycles in a(n) ____.
7. ____ ____ are responsible for recommending approval of the significant aspects, EMPS, and objectives and targets to the Regional Director.
8. The EMS is audited ____.
9. Being aware of how the EMS applies to your duties and responsibilities and adhering to the Environmental Stewardship Policy is ____ role in the EMS.
10. How many Environmental Management Plans (EMPs) are there for the FY14 EMS cycle?
11. EMS data can be found on the intranet ____ ____.
13. Energy, Ecological, and Water Depletion and Enhancement are examples of the FY14 EMS cycle significant ____.
15. Stefanie Jordan serves as the Region's EMS ____.
19. August 2014 is the target date for the EMS external conformance AUDIT.
20. The regional and area office coordinators, along with EMP leads, program leads and the EMS manager comprise the EMS Core ____.

DOWN

2. The resource for ever employee in implementing the EMS is the Great Plains Region, EMS ____.
3. The Regional Director is responsible for declaring ____ to the EMS.
4. Who is responsible to carry out the EMS?
5. Pollution prevention, Environmental compliance, and ____ are the three main points of the Environmental Stewardship Policy.
6. The Region is designated as the "appropriate ____" for implementing EMS.
12. Reduce, Reuse, and ____.
14. EMS is short for Environmental Management ____.
16. The meeting whereby management reviews the EMS and directs changes or new implementation strategies is the management ____.
17. Printing responsibly, turning off monitors and lights, and using recycling bins are examples of reducing our environmental ____.
18. Any and all employees can be requested to participate in an EMS ____.

Answers at: www.usbr.gov/gp/puzzle.html

Upstream view of Kortes Dam, completed in 1951, on the North Platte River.

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