

To move a river



Epic engineering feat, on the fly, saves Loveland's water supply

No one was keeping a secret.

But no one had the time, as the Big Thompson River raged in flood stage in September, to tell Loveland citizens how perilously close they were to losing their water supply.

The greatest untold story of the 2013 Flood is the one of how Loveland Water and Power Department engineers, plus those working with private firms and a host of heavy equipment contractors, saved the City's water lifeline.

"A project of this magnitude usually takes months and months of

planning," Loveland Water and Power Director Steve Adams said. "We didn't have that. We had days."

First casualties of the flood were the road that serves the city's water treatment plant and the power lines that keep it running.

Diesel generators bridged the gap until power could be restored, and a back-door access route is still in use.

But the potentially catastrophic threat came when the flooding Big Thompson jumped out of its channel and bullied its way northward.

It chewed into a gently sloping meadow below the Green Ridge Glade treatment plant west of the city, near the mouth of Big Thompson Canyon.

A mechanized army takes shape on the Big Thompson River near Loveland's water treatment plant on Sept. 16, as the river threatens the third and final water line serving every home and business in the city.

One, two, three

There three water lines lay safely buried, stable in a bed of soil and gravel.

The river scoured the land away, exposing and destroying the first line, a 20-inch diameter pipe, during the flood's first hours.

By Sept. 13, the flood laid bare a second 36-inch pipeline, the force of the water buckling its joints until it zig-zagged along a course that had been a straight shot.

Water managers took it out of service.

That left one – a 48-inch steel pipeline that is the main supply link between Green Ridge Glade and nearly every home and business in Loveland.

"The impacts of losing that line are mind-boggling," Water and Power civil engineer Chris Carlson said in mid-October. "Had that happened, we still would not have water, to this day, in the city."

The relentless Big Thompson by Sept. 14 had eaten its way toward that last line.

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The Big Thompson River twisted, snapped and laid bare two of Loveland's main water supply lines, the 20-inch line on the right and a 36-inch line in the foreground, before threatening the third and last water pipe, a 48-inch main.

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By then, city water managers had assembled a team.

Engineering firm Ayers & Associates joined City engineers in planning and executing the project, along the way recording every detail with a time-lapse camera mounted on a riverside pole.

Heavy machine armada

Five giant excavating machines, four huge bulldozers, seven front-end loaders and a fleet of trucks to haul rock went to work.

The task: Redirect the river, in full flood stage, carrying nearly 20 times its seasonal flow, from the big pipeline and back to its original channel.

In ordinary times, anyone who so much as moves a single boulder in a river must first get permission from the U.S. Army Corps of Engineers, the agency that has regulatory authority over every stream, river and lake in the nation.

Urgency prevented that step. With a nod from the Corps of Engineers, mindful of the unfolding disaster, the river team proceeded.

'We realized we had to think like beavers, and put logs in there. Big ones.'

Tanner Randall, engineer

"I've never seen or been through anything like this, nor have I known anyone who has," Carlson said. "Moving a flooding river? That's unheard of, and nearly impossible to pull off without great complications."

A 200-foot-wide bar of newly deposited gravel and rock lay between the new Big Thompson and its old riverbed.

'Risking his life'

As work began, the operator of a mammoth excavator drove his machine into the river.

"That one guy, in particular, was really risking his life," Carlson said.

It made its way to the gravel bar while another machine, its twin, was stationed on the rapidly eroding riverbank.



Plan 'A' was to build a "spike" dam, jutting out from the new bank, to steer the river flow back to the south.

"We didn't have enough material to make it work," City project manager Tom Greene said.

The scramble for rock and fill became frantic. The owner of Arkins Park Stone Quarry, a producer of architectural-grade sandstone just across the ridge from the river project, signed on as a partner.

A streaming convoy of tandem "rock-box" trucks made the circuit between the job site and the quarry.

"If the numbers are right, we hauled more than 12,000 tons of rock," Greene said. "That's 24 million pounds of rip-rap," the term given to big blocks of rock, put in place to stabilize river banks and control erosion.

'Think like beavers'

With the clock ticking, and the river raging, the team shifted to plan 'B.'

"We realized we had to think like beavers, and put logs in there. Big ones," City civil engineer Tanner Randall said. "I saw some big trees on the side of the river downstream. Big cottonwoods, maybe 80 to 100 feet tall."

The excavating machines tugged the huge trees out of a tangle of flood debris, and brought them upstream. By that time, on Sept. 17, the construction zone was floodlit, and the work went round the clock.

With two big cottonwood trunks in place, the skeleton of a dam was fashioned. Within the ensuing hours,

Equipment operators scrambled as darkness set in to place two huge cottonwood logs in their makeshift dam to redirect the Big Thompson River.

the battle was won as the river bent back southward. But the war waged on.

The excavators turned to the east, gouging out more rock and gravel from a hillside. For three more days, they filled trucks to ferry the material to the nearby job.

'River had its way'

The time-lapse photos captured by the Ayers camera show in dramatic sequence how the rocks, gravel, and logs – moved by men in machines that are designed for more mundane work – turned the flooding river back.

In the weeks and months ahead, the City's water department will work to install a second, parallel 48-inch water line along the one that was saved.

By next summer, the new line will be in service, meeting the City's summer water appetite that will grow to 18 million gallons daily.

The Big Thompson River by then likely will be as it usually is in late spring and early summer – brim-full with runoff from mountain snow, but safely within its banks.

"The river had had its way," Carlson said. "We had to help it, work with it, and get it to do what we wanted it to do. To be able to do it all on the fly, standing out there in that meadow, it's almost incomprehensible."

Senior Center's Home for the Holidays

Celebrate the holidays with the Chilson Senior Center and Aspen Club Senior Services. Be entertained by piano player, Jerry Pippin, Lew Wymisner and 'The Great Loudini Magic Show,' and the Ragtime Rhythm Band, 1:30-3:30 p.m., Wednesday, Dec. 18 at the Senior Center.

Friends and family are welcome and light refreshments will be served. Pre-registration is required.

Cost: \$7, \$5 with senior activity card or Aspen Club Card, or Silver Sneakers pass.

For information call 970-962-2783.

Holiday Dance with Harris & Harris

Dance the night away at the Chilson Senior Center just before Christmas, 7-10 p.m., Monday, Dec. 23.

The husband-wife duo Harris & Harris will perform Big Band, Country (including line dances) and oldie Rock-n-Roll favorites.

Refreshments provided.

Cost: \$4, \$3.50 w/SAC. Ages 18+

For information call 970-962-2783.

In memoriam: Patty Goodwine, 1953-2013

Before the rain-swollen Big Thompson River spread across Loveland and flooded a vast area in mid-September, it roared through Big Thompson Canyon.

The river's canyon race swept away a highway, bridges, cars and homes, including the one where Patty Goodwine had lived for 37 years.

Patty died when the flood waters split her home in two and swept her away in the predawn hours of Sept. 13.

Her loss was not the only one in the tight-knit canyon community of Cedar Cove. Neighbor Evelyn Starnier, 79, also died in the flood.

For 34 years, Patty was a shining presence at the Loveland Public Library, where she began her career as a secretary.

She became much more for library patrons and coworkers, as retired library director

Ted Schmidt told Loveland employees at an October

gathering where city workers were honored.

Part of his message is excerpted here:

Patty Goodwine was and will remain in our memories as a friend, coworker and a unique personality.

I met Patty when she hired in as the library's secretary and began her career at the Loveland Library on Valentines Day in 1979, making her the "heart of the library."

She had a tiny table in library director Elaine Puls' office, and it seemed to work well as she spent most of her early day opening boxes of purchased books and discussing with Mrs. Puls if the books were worth adding to the library collection.

With the library move to the Civic Center complex in 1987, Patty had her special place in the center of the action. Patty and everyone soon acknowledged that the building was "Patty's Place With a Few Books."

Patty was known for her always-present smile, her nicknames for the staff, her rotating candy collection of Red Vines, chocolates and seasonal treats. She was very



Patty Goodwine, in a recent photo in her Loveland Public Library office. (Inset: Patty's house before the flood.)

practical, too, teaching new staff the difference between glue sticks and chapstick, and how to accessorize with Wyoming jewelry. Patty was always the "go-to" person for me and the rest of the staff for where something was stored or hidden.

Patty was a Wyoming girl, born in Rawlins and schooled in Cheyenne. She always was good for a bet on the Border War games, and you knew who she'd pick.

She loved her house in Cedar Cove and especially enjoyed sharing pictures of her deer, elk and bear neighbors.

One summer, Patty sent postcards to the library staff describing her exotic vacation, talking about sites she had visited and food she had eaten – all of it at her home in Cedar Cove!

*Patty will always be The Girl With The Splash of Red.
Rest in peace.*

Eighth Annual Loveland Lights celebrates the season

Loveland Lights, a celebration of winter holiday traditions, will be held Dec. 7-8 at the Loveland Public Library. This year's theme is snowflakes.

The event will feature decorated holiday trees throughout the library, holiday displays, holiday book and bake sales, musical entertainment, holiday entertaining and gifts, the Gingerbread Challenge and activities for children and adults.

Children will have the opportunity to create their own gingerbread house and search the library looking for hidden snowflakes in the 'Find the Snowflake' contest.

This event is free and runs during normal library hours. For more

information call 962-2665 or go to www.lovelandpubliclibrary.org.



Dec. 7:

How are snowflakes formed and why are no two alike? Presenters from the Earth and Atmospheric Sciences Dept. at UNC will talk about the science behind snowflakes.

Dec. 8:

Connie Neumann will present a hands-on narrative for all ages, 'Laura's Christmas Memories,' based on the Little House books.

Also at the library this month...

Kevin Cook, natural history lecturer, presents *Master of Mountains: Brown-Capped Rosy-Finch* as part of his 2013 series, *Colorado Birds: Great Stories of Life and Living*. Cook will present this program from noon to 1 p.m., Tuesday, Dec. 3 and 6 to 7 p.m., Wednesday, Dec. 4 in the Gertrude Scott Room. No reservation is required but seating is limited.

A computer class to educate consumers on using the Medicare.gov website will be held 2-3:30 p.m., Thursday, Dec. 5 in the iLearn classroom, 2nd floor of the library (elevator access). This class is for those aged 50 and above and is designed to provide information on selecting a 2014 drug plan through the website. To register call 635-4097.

Despite the flood majority of customers retained power

The Big Thompson River tore through the canyon above Loveland with such a vengeance there was scarcely a power pole left not leaning or uprooted completely.

The City of Loveland power infrastructure was hardest hit in the canyon, causing loss of service for more than 300 residents throughout the flood-ravaged terrain. Power crews have mapped out a plan by which they can restore the canyon power so residents can begin to rebuild but the damage is devastating.

Remarkably, aside from the communities in the canyon, less than 100 power customers served by the City of Loveland had interruption of service during the Big Thompson Flood.

Within City limits the power system proved to be steadfast. Only a minimal section of the system was disrupted by the flood. In some cases, service disruptions were intentional as the power division de-energized equipment to avoid damage as water levels rose.

The loads in peril were moved to other circuits when possible to prevent loss of service. Customers near Glade Road, the Dam Store and west towards the Narrows lost power

on the first day of the flood but were returned to power within two weeks. Power crews were forced to de-energize areas near south Lincoln Avenue and U.S. 287 and the intersection of Taft Avenue and First Street as the flood waters washed away or exposed equipment.

One week after the flood, power crews packed equipment into Sylvan Dale Ranch on pack animals to assess the damage to the iconic Loveland ranch.

In a collaborative effort with Larimer County, the crews built an emergency access road at Sylvan Dale to allow for the restoration of infrastructure in the area. On Sept. 18, power to the Dam Store was restored.

In the city, the power system has returned to its pre-flood status.



City electric utility employees work to restore power to Sylvan Dale Ranch after flooding in mid-September.

The Power Division continues to work diligently to restore power to customers affected in the canyon.

Power has been restored to the Bartram Park area, whose most notable resident is the Cherry Pie Store.

Several homes in that area have also had power restored. Crews are repairing lines and assessing damage in Drake and working east.

The flood is behind us but recovery and clean-up will continue for months

Lives for many in Loveland have begun to return to a more normal state since the flood ravaged Big Thompson Canyon and areas adjacent to the river in Loveland, but there is still a lot of work to do.

In fact City officials expect that clean-up and recovery work will likely continue for many months as residents and City staff work together to restore the City's golf courses, parks and natural areas to again be functional, safe and attractive.

"Cleaning up and rebuilding our parks, natural areas and infrastructure is going to be a long-term project that will require collaboration by City staff, other agencies and volunteers from the community," said Rod Wensing, Assistant City Manager, who directs the flood recovery. "The response from the community has been terrific so far and we

anticipate that many will want to continue to help with the recovery."

Volunteering at the Disaster Assistance Center

In addition to outdoor clean up, the Northern Colorado Disaster Assistance Center (DAC) distribution center will also continue to need volunteers for the foreseeable future, to help with sorting donated clothing and organizing other donated items.

To volunteer at the DAC residents can go there directly. The DAC is located at 815 SW 14th St., Building D.

Residents can also register to volunteer for whatever help is needed by calling United Way 2-1-1. Cell phone users can reach 2-1-1 at 970-407-7066.

And the City is posting outdoor clean up events at www.cityofloveland.org/volunteerevents as events are organized.

Message from Parks and Recreation Director Gary Havener

From Namaqua Park on the West to Fairgrounds Park on the East, several parks, open space areas, segments of the Recreation trail and three holes of the Mariana Butte Golf Course sustained damaged from the flood. Damage ranged from minor sediment deposits to severe damage or complete elimination of over two miles of the four mile Recreation Trail along the Big Thompson River as well as erosion and washouts of the No. 15, 16 and 17 golf holes at Mariana Butte Golf Course. In addition to Namaqua Park, Barnes Softball Complex, Fairgrounds Park, and Centennial Park were damaged. We were two weeks from opening Rivers Edge Natural Area, but it also sustained major erosion and damage.

Due to the efforts of our exceptional staff working long and hard over the past month, local contractors with special equipment and many special volunteers, we are slowly uncovering debris and preparing to rebuild our parks, trails, open space areas and golf course.

We are far from done with this event as staff and contractors will continue through the winter to clean-up, restore and rebuild. Over the past couple of weekends, volunteers have been a very welcomed and helpful addition to this effort by working on Saturdays to help with debris removal. We will continue with hosting volunteer events as long as weather permits and we have volunteers that are willing to help. Volunteers can find out more specific information on dates, times and locations for clean-up by visiting the City's website or calling 920-2020 to sign up.

City Update is a monthly publication of the City of Loveland. Residents receive City Update according to their utility billing cycle.

Timeliness of the information may be affected by recipients' billing schedule. City Update is also available around the first of every month on the City's website at www.cityofloveland.org. Your comments are encouraged and welcomed at 962-2302, Tom.Hacker@cityofloveland.org.

The City of Loveland is committed to providing an equal opportunity for citizens and does not discriminate on the basis of disability, race, color, national origin, religion, sexual orientation or gender. The City will make reasonable accommodations for citizens in accordance with the Americans with Disabilities Act. For more information, please contact the City's ADA Coordinator at Betty.Greenberg@cityofloveland.org or 962-3319.