



9/26/2014



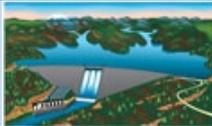
# Some Dam – Hydro News™ And Other Stuff



**Quote of Note:** “Forgive your enemies. It messes up their heads.” - Unknown  
**Note:** There’s some enemies you can’t forgive!

*Some Dam - Hydro News → Newsletter Archive for Back Issues and Search <http://npdp.stanford.edu/>  
Click on Link (Some Dam - Hydro News) Bottom Right - Under Perspectives*

**“Good wine is a necessity of life.” - -Thomas Jefferson**  
**Ron’s wine pick of the week: 2012 Prisoner Wine Company US Red Blend “Prisoner”**  
**“No nation was ever drunk when wine was cheap.” - - Thomas Jefferson**



## Dams:

(Gotta have drinking water.)

### **Dam construction to begin early 2015**

#### **New Flower Creek Dam expected to be complete by late 2015**

thewesternnews.com, September 12, 2014, byHeidi Desch

The City of Libby is on target to finally begin construction of a new Flower Creek Dam early next year. Bids on the project are due back to the city next Wednesday. Work will likely begin in January, beginning by drawing down the water in the reservoir. **The city plans to replace the 68-year old dam, which holds the city’s drinking water, with a new gravity-type dam 85 feet farther downstream.** Engineers issued a report in 2011 that said the dam was losing its strength and under normal conditions the dam would be usable for another five years.

The estimated cost to construct the new dam is approximately \$8 million and is expected to take one year to complete. **Bringing the project — originally planned for construction last year — to fruition has been an arduous process.** Construction was delayed after the U.S. Fish and Wildlife Service rescinded a 2012 comment on the project and asked for a biological assessment of the grizzly bear, Canada lynx and bull trout populations to be completed. The project was finally given the go-ahead this spring.

In July the city received nearly \$8 million in federal assistance to help replace the aging dam. The U.S. Department of Agriculture approved a \$3.2 million loan and \$4.7 million grant for the dam replacement project. Since securing funding, the city's engineering firm, Morrison-Maierle, have finalized designs for the project and the city went out for bids last month. Paul Burnham, of Morrison-Maierle, met with city officials Tuesday to give them an update on the how he construction process will take place. "The reservoir will be drawn all the way down," he said. "The system operates most the time as if there is no reservoir anyway so it shouldn't be a problem. For the last 30 years there's only been two years where the water flowing through the dam didn't provide enough to serve the city." Beginning in January the water in the 220-acre reservoir behind the dam will be released at a rate of about two feet per day until the reservoir is drawn down completely. The process is expected to take roughly a month and then the contractor will be able to begin dismantling the old dam. By May a bypass pipe will be in place to divert the water from Flower Creek around the construction site. "This will allow the contractor to be able to work while water is moving through freely," he said. "Even through spring runoff, the bypass line will be able to handle the water."

The new gravity-type dam will be constructed 85 feet downstream on almost the same footprint of the existing dam and will have about the same capacity for water storage. The dam is expected to have outlet facilities for greater control of storage levels and in-stream flows. The replacement of the dam is critical. Morrison-Maierle, the Kalispell-based engineering firm, in 2010 completed a core sample of the arch dam and found that the concrete strength was less than 1,000 pounds per square inch. Typical concrete cores demonstrate strength of 3,000 to 4,000 psi. A report issued in 2011 said the dam would need to be replaced by 2016. Included in the environmental report is mitigation measures expected to address impacts associated with construction, including the access road, dam construction and tear down of the existing dam. Morrison-Maierle's assessment, which was initially drafted in January 2013, recommended replacement of the dam. The report notes that "given the evidence of initial poor construction practices, significant variability in the condition of the concrete and extremely poor concrete condition, combined with the significant risk to public safety and property" that the dam be replaced.

(These kind of things keep happening in NM.)

### **Blasting caps, dynamite found near NM dam**

By The Associated Press Published: September 12, 2014, krqe.com

Truth Or Consequences, N.M. (AP) – New Mexico State Police say blasting caps and deteriorated dynamite has been disposed of after being found in a manhole near Elephant Butte Dam. It's unclear how long the items had been there. Authorities say the explosives were found Thursday by employees of the electric cooperative as they were preparing to begin an excavation project. A red box about 18 inches long, 14 inches high and 12 inches wide was located inside a fenced-in power transformer area some 1,000 yards from the dam. The dam is located near Truth or Consequences, New Mexico. State Police say a bomb team X-rayed the box and found about 50 blasting caps and an unknown amount of deteriorated dynamite. They say the dynamite was desensitized and disposed of after being removed from the manhole.



(A 43 % increase will get your attention!)

### **Estimated costs up for Arkansas River dam project**

Posted: Sep 12, 2014, By: Associated Press, kxii.com

Tulsa, Okla. -- A memo sent to the Arkansas River Infrastructure Task Force estimates the cost to build or refurbish four low-water dams in the Arkansas River has risen by \$80 million. Tulsa World

reports (<http://bit.ly/YDYAPR>) the latest estimate for the dams is \$266 million. The original estimate was \$186 million. The total cost for the river project is now estimated at \$300 million, including \$34 million for levee system repairs. City Councilor and Task Force Chairman G.T. Bynum says the news is frustrating but the additional costs reflect related work that must be done as part of the projects. The estimates include construction of low-water dams in Sand Springs, south Tulsa/Jenks and Bixby and the refurbishment of Zink Dam in Tulsa.

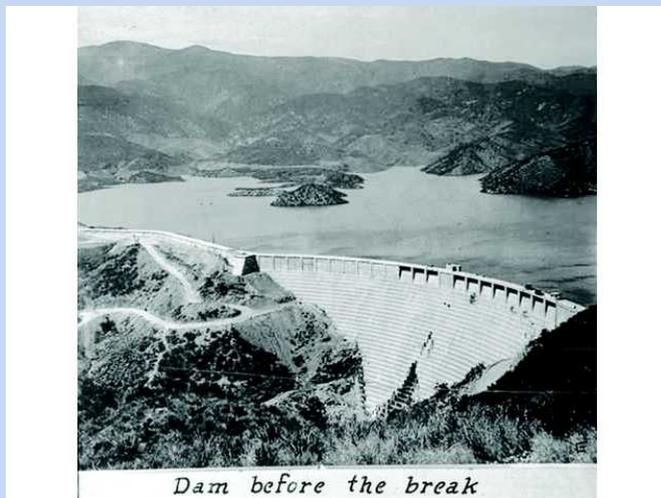
(Every dam needs a good foundation and abutments.)

## Letter-writing campaign aims to memorialize St. Francis Dam site

September 13, 2014, By Mason Nesbitt Signal Staff Writer, [signalscv.com](mailto:signalscv.com)

The St. Francis Dam opened in 1926 and failed on March 12, 1928. The resulting flood swept down San Francisquito Canyon and across much of the rest of the Santa Clarita Valley. Two floods — one in the Santa Clarita Valley — occurred 2,500 miles and 39 years apart. But both resulted from failed dams and both devastated their regions: one killing more than 2,000 people, and the other roughly 600. The site of one failed dam — in Johnstown, Pa., in 1889 — is a national memorial. The other — the St. Francis Dam disaster in San Francisquito Canyon in 1928 — is a sometimes-forgotten pile of rubble. Alan Pollack, president of the Santa Clarita Valley Historical Society, wants residents to join a letter-writing campaign urging Congress to designate the St. Francis Dam site a national memorial, too.

And with only a short time left in the current congressional session, there's no time to waste. "After 86 years there is, sadly, ... nothing but the ruins of the dam," Pollack said in a statement that compares the current San Francisquito Canyon dam site to that of Johnstown, which he visited three years ago. The St. Francis Dam opened in 1926 and failed on March 12, 1928. The resulting flood swept down San Francisquito Canyon and across much of the rest of the Santa Clara River Valley, wiping out all or parts of Castaic Junction, Piru, Fillmore, Saticoy and Santa



*Dam before the break*

### SAMPLE LETTER:

DATE

The Honorable Howard "Buck" McKeon  
United States House of Representatives  
266 The Old Road, Suite 203  
Santa Clarita, Ca. 91381

Support for the Proposed Fish Canyon  
Wilderness and the St. Francis Dam  
National Memorial

Dear Congressman McKeon:

Thank you for your introduction of the St. Francis Dam Memorial and Monument. Nothing could be more exciting to our community than recognizing the importance of this legislation and remembering the people who died as a result of the disaster. We admire your courage in bringing this legislation forward, and look forward to the bill's passage this year. We thank you for doing something to recognize this disaster that no one else has had the courage to undertake in the 86 years since it occurred. By passing this bill, you will be leaving behind a great legacy in Santa Clarita. Many people will be learning about this horrendous event for the first time. Children will be able to visit the visitor's center and museum and learn about their local history. This is tremendously important to Santa Clarita and all Californians. It is a great thing to honor those who died, and to memorialize the site for future generations. We applaud your actions.

Thank you too for pushing the Castaic Wilderness closer to legislation. These areas are important habitat, a source of water for Santa Clarita, and the only available potential wilderness we have left in the district. Preserving it in perpetuity is of great importance. It is also adjacent to the dam site. We hope that eventually it can be connected via single track trails to provide overlooks of the dam ruins.

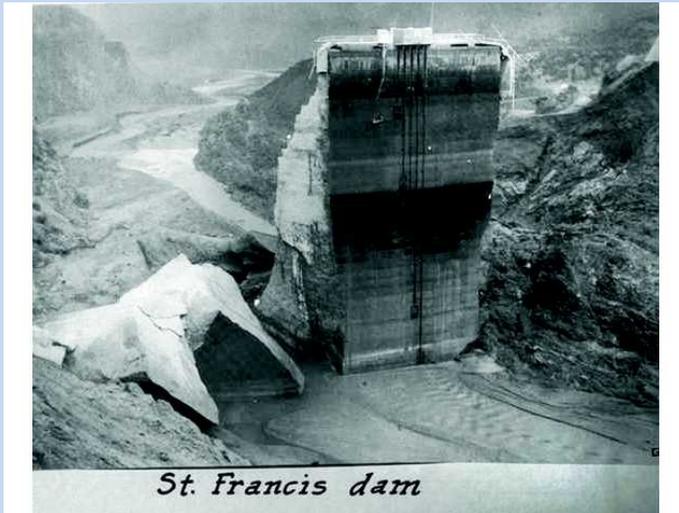
Thank you again for your important legislation. We look forward to the passage of this important bill.

Sincerely,  
Signed:

Paula. It killed approximately 600 people, according to a government document. "It is time that we appropriately memorialize the

hundreds of lives lost on one tragic evening in 1928," Pollack's statement reads. In June, Pollack traveled to Washington, D.C., with Dianne Erskine-Hellrigel and Linda Castro and discussed the issue with Congressman Howard "Buck" McKeon's staff.

On July 31 McKeon introduced H.R. 5357, a bill to "authorize a national memorial to commemorate those killed by the collapse of the Saint Francis Dam." "We now want to reach for the stars and see if we can get this bill passed in the remaining two weeks that Congress is in session before the midterm elections," Pollack said in the statement. And in an attempt to beat the deadline, Pollack has started a letter campaign hoping to "stimulate action in a gridlocked Congress." Erskine-Hellrigel has written a letter template people can sign and send back to her by email at



Zuliebear@aol.com. She will then bring the letters to McKeon. The letter thanks McKeon for signing the bill and reminds him of possible good the bill could do. The template can be changed to express individual views, Pollack's statement says. If the bill doesn't pass before the end of this congressional session, Pollack says he plans to work with whichever candidate — former state legislator Tony Strickland or state Sen. Steve Knight — replaces McKeon, who is retiring. If passed, the bill would create a 15-member commission responsible to make recommendations for how the permanent memorial on the dam site is to be built and paid for. The bill states it must do so within two years of the act passing. "We're going to do everything in our power" to get the bill passed, Pollack said by phone Friday.

(Good question. Age shouldn't be a factor. What shape it's in counts.)

### **Officials: demolish 184-year-old dam, or not?**

By Patrick O'Neill, September 15, 2014, coshoctontribune.com

Zanesville, Ohio – State wildlife officials are asking for public opinion about the proposed removal of the Six Mile Dam in Warsaw. The 184-year-old dam, located along the Walhonding River just east of downtown, has more than exceeded its life expectancy, said Mike Greenlee, Ohio Department of Natural Resources fish management supervisor. Although Greenlee could not offer a specific date, he said it would require about \$4.4 million worth of repairs in the immediate future. Demolition would cost \$1.8 million, according to ODNR estimates. Repair or demolition costs could be covered by a variety of sources, including state stream mitigation funds, federal Environmental Protection Agency funding, and water resource restoration sponsorships.



The dam, a candidate for the national historic register, is an essential piece of area history to people such as Mike Geog, 40, who's been visiting the dam since he was a boy. Geog, an employee at Whispering Falls Campground, located at the foot of the dam, also depends on the 306-foot wide, eight-foot tall concrete-capped barrier for his livelihood. "It's what brings us our

business. It's one of the most beautiful landmarks in Ohio," Geog said. "I've fished here with my parents, grandparents; now they talk about taking it out? That's just destroying memories." Greenlee sympathized with people who have a special connection to the Six Mile Dam and assured area residents "this plan is not set in stone." State wildlife officials will host a meeting Sept. 27 at the Walhonding Valley Fire Department to discuss the dam's future. "We want feedback from the people who could potentially be affected by this," Greenlee said. "We really hope people will come out to meet with us." Removal of the dam would replenish populations of indigenous species such as smallmouth bass, which are struggling in the stagnant water upstream from the dam, Greenlee said. Letting the water flow freely also would allow freshwater mussels to be carried up- and downstream, preserving the biological diversity of the area. "Our mission is to preserve habitats for sustainable use," Greenlee said. "Given that mission, we feel it's responsible for us to try and address some of the problems out there." The cabins and dwellings directly downstream from the Six Mile Dam would not be forced to relocate if the dam were removed, Greenlee said. There also would be minimal damage to the surrounding agriculture, he added. "I think there's even a chance that we can create new, desirable features that are still attractive for people visiting the campground," Greenlee said. Still, for Rose Fetters, a part-owner of Whispering Falls who lives within sight of the dam, the decision is clear. "They should leave it," Fetters said. "It's so peaceful. I say leave it alone."

(Give 'em hell Rich!)

### **Letter: Some dams serve important function**

eagletribune.com, September 15, 2014

To the editor:

I read with some skepticism the article "Opening up the Shawsheen" about dam removal. Yes, it is probably a good thing, for fish and for anti-flooding, to remove the Balmoral and Stevens streets dams. Clearly a good idea. But why does it take \$1 million dollars to remove these dams? It seems to me that two workers, a shovel, and a dump truck, should be able to accomplish this task in one week per dam! Why the waste of money? And by implication, the article mentions the Ballardvale dam. Well, that dam has a very important function -- providing a recreational lake upstream. If that dam is removed, all that will be left will be unsightly mud flats -- unbuildable due to flood plain restriction, mosquito infested (remember EEE?), unsightly, and killing all the fish that thrive in the lake. Stop trying to foist some sort of ultra-environmentalist viewpoint on the dam at Ballardvale. It is a dam to be protected and saved, at all costs. If the issue is fish, then provide funds to the owner to establish a fish ladder, like the one successfully operating at the dam in Lowell! Rich Michalik, Andover, MA

(If it's low hazard and not bothering anything, leave it alone. You can't get a better photo! This is a treatise on dam removal!)

### **Group says Wehr's Dam should come down**

By Patrick Lester, Of The Morning Call, mcall.com, 9/14/14

William Wehr and his daughter Lori Wehr Young hope to save Wehr's Dam from its possible removal. They have a Save Wehr's Dam petition already with eight-hundred signatures to save the one-hundred and ten year old dam. Wehr's Dam could be a thing of the past.

Should century-old dams be saved? Environmentalists, preservationists at odds over dams. Wehr's Dam has been a fixture along the Jordan Creek in South Whitehall for more than a century. Built of timber and concrete like thousands of dams in waterways across Pennsylvania, it has outlived by more than



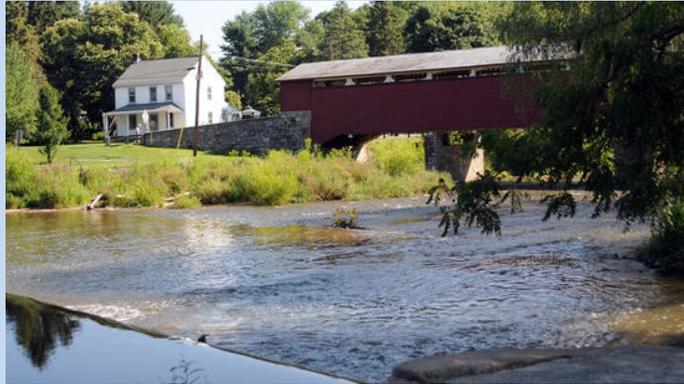
six decades the grist mill it was built to power. But the dam's proximity to Wehr's Covered Bridge,

one of the handful of historic wooden bridges in the Lehigh Valley, gives it a goose-bump appeal that few others generate. Visitors are drawn to the cascading sound of water at Covered Bridge Park and the picture-perfect setting of the bridge by the dam. They describe it as nothing short of majestic, even magical. It attracts picnickers, youth groups and scouts. Photo-seekers, tube-floaters and trout-seeking anglers. On a recent afternoon, a Parkland High School student was getting her senior photo taken there, as many have before her.

"The beauty of it ... there's no comparison to it," said Ulla Martz, who has lived near the dam for 34 years. But practicality and the needs of nature dictate that the century-old structure should come down, say environmentalists and organizations that advocate for improvements to fish passage and water quality along creeks and rivers. In a state that leads the nation in dam removals, Wehr's Dam, which stands 6 feet high and stretches 165 feet across Jordan Creek, won't be going down without a fight from a growing group of advocates clinging tightly to a piece of their heritage. A proposal by Wildlands Conservancy to remove Wehr's Dam, as it has removed many other dams, has pitted conservationists against historical preservationists in a clash that could play out well into 2015. And that science vs. sentiment debate may be a prelude for what's to come in other communities in Lehigh and Northampton counties. "It's not a Wildlands thing," said Abigail Pattishall, Wildlands' vice president of conservation. "It's a national movement. This is definitely an issue that South Whitehall, Allentown, Bethlehem, Whitehall [and other municipalities] have to face." Advocates of dam demolition point to myriad benefits of a natural-flowing stream they say is better for fish, water quality and the overall health of waterways. Opponents generally want to preserve the aesthetic beauty of dams, their historic nature and the pleasing sound of the water falls they create. The movement to take down dams is hardly a new phenomenon. American Rivers, a Washington, D.C.-based organization that protects rivers and restores damaged waterways, says nearly 1,150 dams have been removed in the country during the last century. That's a fraction of the 76,000 dams in the United States cataloged by the U.S. Army Corps of Engineers and Federal Emergency Management Agency. Pennsylvania regulates about 3,370 dams across the state, including Wehr's Dam, which is inspected every five years, according to the state Department of Environmental Protection. But the agency said there could be as many as 10,000 dams statewide. Only dams that meet certain criteria, including the acreage of their drainage area and water depth, are regulated.

Pennsylvania is "by far" the national leader in dam removals, with more than 200 since 2000, according to Laura Craig, associate director of American Rivers' River Restoration Program. Craig's group and others say those projects restore more beneficial water flows for fish and wildlife. Dams, they say, have contributed to diminished fish populations. Wildlands says dams create pools of water that are too warm and too low in oxygen to support healthy fish and aquatic insect populations. They also create a sediment buildup at the stream bottom that eliminates places where insects eaten by fish can lay their eggs. "If you look at it from an environmental side, a naturalist side, the un-dammed river is now flowing in a more natural state and sediment is moving down [the waterway] and fish can move upstream," said David Velinsky, vice president of the Patrick Center for Environmental Research at the Academy of Natural Sciences in Philadelphia. "On the flip side, because of flooding and storms and so forth, there is greater erosion in some areas. "If you're looking to increase fish potential and the ecological services of these rivering systems, it's better to start un-damming." Wildlands, which is based in Lower Macungie, notes water levels lower when dams are removed. That, coupled with stream bank restoration, reduces flooding. Removing dams also may spare dam owners the costs of repairs and maintenance and eliminates a potential safety hazard. The state Fish & Boat Commission, in a publication on dams, says: "Of all the things you may encounter on a river or stream, the low-head dam is one of the most dangerous. In fact, if an engineer designed an efficient, unattended, self-operated drowning machine, it would be hard to come up with anything more effective than a low-head dam under certain flow conditions." While Wehr's Dam is technically a run-of-the-river dam, the type built across a waterway for the purpose of impounding water, the commission says such dams can have the same dangerous currents that swamp vessels and drag down swimmers in a low-head dam.

Among the top safety concerns are structural deficiencies that can lead to a dam break and threaten lives, according to the Association of State Dam Safety Officials. Older dams are more susceptible to failure. The association says nearly a third of Pennsylvania's regulated dams have "high hazard potential" or "significant hazard potential" a label that refers to the potential consequences of a dam's failure. Wehr's Dam is classified as a "low hazard" dam. For those lobbying to keep the dam, there is a historical and emotional attachment to



consider, in addition to a recreational benefit. Locals say anglers are known to line up by the dozens upstream of the dam on the first day of fishing season. Historically, dams have been created for water supplies — irrigation for agriculture, hydroelectric power for mills, and water recreation. While many dams are torn down without a peep from the public, Wehr's Dam has prompted residents and history buffs to dig in for a fight. 'A magical spot' William Wehr, a descendant of William H. Wehr, who helped build the dam in 1904 and once owned the mill, concurs with those fighting the Wildlands' effort. He and his daughter, Lori Wehr Young, are among those working with Save Wehr's Dam, a group that has garnered about 1,000 signatures on a petition to keep the dam intact. They don't necessarily dispute Wildlands' scientific argument but believe the dam's beauty and history are reason enough to preserve it.

If the dam is removed, a beautiful view will disappear, along with "the complete magic of the park," said Lori Wehr Young. Had it not been for the dam and William H. Wehr's entrepreneurship, said Ron Turner, who has lived near the dam for three decades and also is part of the group, "this whole area would not have enjoyed the economic prosperity it did." Without the dam, he noted, there would have been no mill and without the mill, the area's future may have been different. Michael Molovinsky, a blogger running for a seat in the state House of Representatives, is part of the group organized to save what he called an "icon," "a magical spot." He argues the dam reduces the frequency at which portions of the creek dry up, a claim disputed by Wildlands. Because the township owns the dam, South Whitehall commissioners ultimately will decide the structure's fate. Pattishall has told the commissioners that dam removal is supported by an "endless list" of environmental and recreational groups and agencies, including Trout Unlimited and American Whitewater, which works to restore flows to white-water rivers. Removing Wehr's Dam, the advocates argue, would improve the Jordan Creek, which is home to trout, smallmouth bass, rock bass and a variety of forage fish such as minnows. The Wildlands, which has photos of cracks in the dam, says the structure is showing its age. It's not clear how much the township spends on maintenance of the dam. The township did not respond to requests for that information. The state Department of Environmental Protection and the Fish & Boat Commission say they don't have a position on dam removals, but state law requires a dam be removed if the owner no longer wants to maintain it. The agencies facilitate removals when owners select that option.

The state's Historical and Museum Commission does not judge the historical significance of dams. But the commission investigates whether dam projects will affect historic resources, which in the case of Wehr's Dam could include nearby Wehr's Covered Bridge, which was built in 1841, restored and listed on the National Register of Historic Places. During a review of a dam in Wernersville, for example, the agency determined that the removal would have an impact on Wernersville State Hospital, which is eligible for the National Register of Historic Places. The agency determined the project would adversely affect the "historic and architectural qualities that make the property eligible." A federal judge in Oregon made a different determination in a 2010 case that ended with the removal of a century-old dam. The judge said opponents of the demolition hadn't proved, among other things, the historical significance of the dam.

## Social impacts

The Delaware River Shad Fishermen's Association generally advocates for the removal of dams that compromise the "bio productivity" of waterways. "The population of migratory fish along the East Coast has crashed. They're not able to get to breeding areas, and they're being overfished by commercial fisheries," said Charles Furst, the organization's president. "That's why it's so important to remove dams, in our opinion. Healthier rivers translate to a healthier bay, which translates to a healthier ocean. "Where we've had dam removals, we've seen virtually immediate results." While many experts agree there are multiple benefits to dam removal, there isn't an abundance of data in Pennsylvania to document that opinion. Few of those projects are accompanied by ecological assessments. Studies done on dam removals across the country generally indicate an increase in the amount of sediment that moves downstream from behind the dam once it's removed, potentially affecting a stream or river adversely. A 2002 report on the science and decision-making of dam removals by the H. John Heinz III Center for Science, Economics and the Environment noted that every dam removal project is unique. "When dam owners, governmental agencies, interest groups and private citizens debate removal options for specific structures, the decision-making process often needs to be reinvented for each case, with no accounting for scientific understanding of the likely outcomes of the decision," the report says. While noting the many biological benefits of dam removal, the study also notes the social aspects, which groups like Wildlands acknowledge. "This is a serious shortcoming, because the social context of dam removal decisions is often as important as the environmental and economic contexts," the report says. Past studies do show what possible outcomes can be realized. In 1999, the Academy of Natural Sciences in Philadelphia and the University of Delaware teamed up to study the removal of a dam along the Manatawny Creek in the Pottstown area. Scientists found that the dam's removal did not markedly improve water quality in the creek, according to a 2002 article in the Journal of the American Water Resources Association. The study also found that some fish species were negatively affected when their habitats were altered and sentiment shifted. It notes the 1973 removal of a dam on the upper Hudson River that had "far-reaching ecosystem consequences." PCB-contaminated sediment settled over a nearly 200-mile stretch of the river, and commercial fishing of striped bass was banned. Velinsky, a bio geochemist who was involved with the Manatawny study, said the project along that creek led to more stream-bank erosion that required more stream maintenance. Elizabeth Grossman, an Oregon journalist who wrote "Watershed: The Undamming of America," chronicled a number of dam removals for her book, published in 2002. She said sentimentality for dams was a common theme. "In a lot of places, once people could see what it was going to look like and that they could see they would still have recreational amenities," they eventually accepted the change. She said it's difficult to generalize about dam removals because the impact varies from place to place. "Each one of these is really complicated," she said. The cost of removing a dam averages around \$75,000, according to Craig of American Rivers, which has been involved in about 200 dam removals nationally. But more money usually is needed to restore a creek and flood plain. Most recently, Atlas Dam in Northampton was scheduled to come down. While its demise was delayed by public outcry, earlier this year the effort to raze it won a \$420,900 grant from DEP. Wildlands Conservancy has said it has lined up funding to remove Wehr's Dam. It worked with Allentown and Whitehall Township last year to remove six dams in Jordan Creek and Little Lehigh Creek. Funding for that work came from multiple sources, including the state, American Rivers, National Oceanic and Atmospheric Administration, Fish America Foundation and private organizations, according to Wildlands.

In 2013, Bethlehem removed a 50-foot dam in the Monocacy Creek to reduce flooding. In Easton, city officials decided against removing the Chain and Easton dams following hot debate last year. South Whitehall, in a comprehensive 2013 study of Covered Bridge Park, estimated dam removal costs at \$150,000. The study notes the proposal is part of an initiative to get rid of nine dams along the creek. But the study also notes the dam's virtues. "The dam remains a favorite spot along the Jordan Creek for photographers taking advantage of the setting in relation to Wehr's Covered Bridge." Its removal would "significantly impact" the creek, the study says. "Without proper planning, sediment bars will form and most likely raise Jordan Creek." Craig, whose group has funded portions of projects along the Little Lehigh Creek, said opponents' concerns can

sometimes be addressed. In New Jersey, for example, one of the primary concerns about removal of the Finesville Dam along the Musconetcong River was the loss of the soothing sound the dam had provided for decades. To quell those concerns, Craig said, boulders were added to the waterway to help mimic the sound of the rolling water. "It mocks the sound very nicely," she said. American Rivers, Wildlands and other groups say they consider the social and cultural impact of dam removals. In many cases, removed dams are memorialized with signs and photos at the dam site. In some cases, portions of dams have been left up as a compromise. South Whitehall commissioners agreed to let Wildlands look into the costs and impact of removing the dam. But they also decided to do their own study of the costs and maintenance involved in keeping the dam. Pattishall said her group likely would have a study finished in six months and that a removal project, if approved, would likely happen in 2016. Her organization is not trying to force the township's hand, she said. If South Whitehall decides to keep the dam, she said, "we'll move on to the next one."

### **Flood, stress relief arriving**

By Forum News Service on Sep 15, 2014, jamestownsun.com

Cavalier, N.D. — Flood and stress relief are about to arrive for people living in Cavalier, which was evacuated in June 2013 as a result of heavy rains that threatened a 50-year-old earthen dam. The \$7.4 million Renwick Dam Rehabilitation Project at Icelandic State park is expected to be completed in October. The new spillway is 5 feet higher than the old dam. "Obviously, when the new spillway's in place, it should take care of any huge water concerns with the dams in the watershed and give us some more security in town," Cavalier Mayor Ken Briese said. Renwick is the last of 10 dams in the Tongue River Watershed, the last line of defense for people living in Cavalier. The river that runs through the city flows into the Pembina River just before emptying into the Red River at Pembina, N.D. The dam was severely tested in May 2013, after 10 inches of rain mixed with runoff from a snowy late winter resulted in floodwaters overtopping the earthen — sand and soil, with vegetation — auxiliary spillways on seven of the 10 dams, five each in Cavalier and Pembina counties. The U.S. Army Corps of Engineers built a 6-foot-high, 300-foot-long emergency levee to prevent floodwaters from washing out the Renwick spillway. As a precaution, the entire city of Cavalier, with about 1,300 residents, was evacuated for about 60 hours. Ultimately, the dam held. "You never sleep easy when you get 10 inches of rain, and you have a series of retention dams," the mayor said. "We were looking at a huge amount of water. It just stopped raining in time for us."

### **Park access**

Renwick Dam and Lake Renwick are located at Icelandic State Park, a popular recreation area with camping, boating and a beach with public swimming, about 6 miles west of Cavalier. The construction project has forced park users to take a gravel road detour for a few miles to reach a temporary park entrance. "Our camping numbers have actually been doing very well," Park Manager Justin Robinson said. Camping numbers had been increasing steadily between 2008 and 2011, when they reached a high of about 9,200. Those numbers decreased to just fewer than 7,000 in 2013, and should be about at that level this year. While some regular campers decided to stay away during the construction, the number of first-time campers increased, he said. "It actually created new camping opportunities for people who haven't been here before," he said. "We've broadened our base." He said the construction did reduce the number of park day-users, especially those who use the swimming beach. Robinson found a silver lining, nonetheless. "June was really wet," he said. "The park really needed time to rest, to rebound from the flooding last year. The shoreline and the beach needed some time." 19,000 cubic yards. The dam, owned and operated by the Pembina County Water Resource District, was built in 1962, through the USDA Natural Resource Conservation Service Pilot Watershed Protection Program.

Back in the early 1970s, Renwick Dam was ranked as the most hazardous dam in North Dakota and one of the Top 10 high-hazard dams in the nation. The Larimore Dam on the Turtle River, west of Grand Forks, also was on the state's hazardous list. Crews have been working since late

July on a 500-foot-long auxiliary spillway. That portion of the project will require about 19,000 cubic yards of roller-compacted concrete, according to Matt Dasenbrock, project engineer for the USDA Natural Resource Conservation Service. "It's got very low content of water, so it's extremely strong," Dasenbrock said of the concrete, which is made on site with a mix of cement, sand and aggregate that is transported to the spillway and poured by a series of conveyor belts. The spillway is up to 5 feet thick in some places, and covers an area nearly the size of two football fields. It actually resembles stadium seating, with 32 steps. Last week, crews poured about two steps per day, according to Dasenbrock. Spillway construction is expected to be completed by the end of the month. Then, crews will build a new access road over the top of the dam to the park, as well as other finishing touches.

### Alleviating stress

Similar flooding incidents have prompted reconstruction projects in other watershed dams in the Red River Valley. A recent example was in 2009, when the Absaraka Dam, 35 miles west of Fargo, was compromised by spring flooding, which included saturated ground and an unusually large amount of water being held back by the dam and emergency spillway. It was damaged again in 2010. Since then, the dam in the Swan-Buffero Creek watershed has been fortified with a concrete structure. However, no other major dam reconstruction projects currently have been funded in North Dakota, according to Karen Goff, dam safety engineer with the North Dakota State Water Commission. "This is something we've been eagerly anticipating for several years," Briese said of the Renwick Dam project. "We should have everything in place. It's a terrific system, but you can only hold so much water. With this new dam, that anxiousness should be alleviated."

### Tribe protests plans to raise dam

By Tim Hearden, Published: September 15, 2014, capitalpress.com

Shasta Lake, Calif. — A local tribe showed its displeasure with a proposal to raise Shasta Dam here by holding a four-day fast and ceremonial war dance beginning at dusk Sept. 11. Members of the Winnemem Wintu Tribe contend the proposal, which the U.S. Bureau of Reclamation could unveil by the end of this year, would cause more of their historical lands along the McCloud River to be flooded. "We're a traditional tribe — we believe in our ceremonies and we believe in the sacred," said Caleen Sisk, chief of the tribe based in Redding, Calif. "We're telling the sacred places and the river that we're doing everything we can to bring the salmon back and help the waters." The Winnemem say they lost much of their homeland and their salmon when the dam was first constructed, and any raising would threaten to submerge many of their sacred sites and village areas. "We're hoping the people of California will wake up to some of the water issues," Sisk said. "California should be a salmon state ... Before we started farming in the desert, we had every run of salmon. We should do that again because that's what's good for California." While raising the dam has long been discussed as a way to add water storage, Reclamation officials are studying a series of alternative ranging from taking no action to raising it by 18 feet, project spokesman Louis Moore said.



Once the proposal has gone through reviews, U.S. Interior Secretary Sally Jewell will present a proposal to Congress, which will determine the project's feasibility and funding, Moore said. A series of workshops and hearings on the proposals was held last year and comments were taken, and the document addresses cultural concerns as required by federal environmental law, he said.

A preliminary study in 2011 acknowledged that cultural impacts from the project would be “significant,” as the Wintu have identified areas where ceremonies are still conducted as well as some 155 ancestral villages within the Shasta Lake area. “The phase that we’re in right now is really exploratory,” Moore said. “We’re developing the information that’s going to be considered. There will be estimates for total costs ... When it actually comes to funding, that’s going to be a congressional act.” As the bureau completes its work, the dam-raising proposal has taken on new significance as it was one of four projects identified in legislation placing a \$7.5 billion state water bond on the November ballot, which would include \$2.7 billion for storage. The Winnemem war dance was scheduled for the 10-year anniversary of a similar ceremony held at the dam in 2004 as raising the structure was being discussed then, tribal member Char Berta said. Given a federal permit, the participants were camping in a grassy area near the dam and performing occasional “sets” of dancing. The ceremony began with the lighting of a fire, which signifies the tribe’s origin at Mt. Shasta, Sisk said. “Ten years ago we were here, and 10 years later we’re at the same place,” Berta said. “They haven’t really heard us.”

(Who said they don’t build new dams. You gotta have drinking water.)

### Officials dedicate enlarged Ragged Mountain Dam

Sep 18, 2014, by K. Burnell Evans, [dailyprogress.com](http://dailyprogress.com)

For those who feared it would never be built, Thursday’s dedication of the enlarged Ragged Mountain Dam in Albemarle County proved an emotional event. The lynchpin of the region’s 50-year water supply plan was at times bitterly contested and cost about \$36 million from design to construction, officials said. The dam will boost water reserves for Albemarle County, Charlottesville and the University of Virginia. “I thought ... it would take two years to get permits and two years to build the dam and we’d be done in four years,” said Mike Gaffney, chairman of the board that oversees the Rivanna Water and Sewer Authority.



Those four years turned into more than a decade. Perched atop the 129-foot deep, 800-foot wide dam Wednesday, Gaffney marveled at the project’s circuitous path to completion. “It’s like that [lyric from a] Grateful Dead song: ‘what a long, strange trip it’s been,’” he said, drawing a ripple of applause from the dozens of officials and community members who turned out for the project’s dedication ceremony.

The new dam triples the Ragged Mountain Reservoir’s holding capacity to about 1.5 billion gallons, enough to fill more than 2,200 swimming pools. The reservoir’s existing dams, built in 1885 and 1908, collectively held 514 million gallons. The project is part of a package of improvements the Rivanna authority estimates will meet community water infrastructure needs through 2055. The push for more reserves came after a severe drought stunned the region in 2002. “We were fearful that our community was going to run out of water,” said Clarence Roberts, chairman of the Albemarle County Service Authority, the sole public retail provider of water and wastewater services in the county. Officials recalled taking three-minute showers, flushing the toilet once a day and arguing for glasses of water at restaurants. “All the restaurants were serving things on paper plates, with plastic cups and utensils because they couldn’t wash dishes,” recalled Albemarle Supervisor Kenneth C. Boyd. A solution was the subject of the first meeting Thomas Frederick said he had as incoming executive director of the Rivanna authority. He wasn’t, however, prepared for the debate over how best to accomplish shared goals could become.

Sustained opposition from a vocal contingent of mostly city residents hinged on an alternate plan to dredge the South Fork Rivanna Reservoir and raise an existing dam.

Political maneuvering between the county and city over costs associated with the project also delayed the dam. But no trace of past discord was evident Thursday as officials from both localities credited one another with working together for the common good. "This new dam represents to most of us, the most significant [local] infrastructural achievement ... in our lifetime," said Charlottesville Mayor Satyendra Huja. "This is just so wonderful," Albemarle Supervisor Liz Palmer said, looking out over the existing dam, which will soon be under water. "And we're not damming a river — this is a natural holding bowl that this community just happens to have. We are geographically blessed." An upcoming phase in the 50-year plan will involve building a pipeline to draw water from the South Fork Rivanna Reservoir to Ragged Mountain. "We've come a long way," Gaffney said, "[but] we still have more work to do."



## **Hydro:**

(Now that's a hydro site!)

### **Minnesota Power rededicates Hydroelectric Station**

Y K. Vandervort, 9/12/14, timberjay.com

Winton – Most people only see the Winton Hydroelectric Station on the Kawishiwi River from below on the Kawishiwi Falls trail or from a boat on Fall or Garden lake. But at the Ely Harvest Moon Festival on Friday, several vans full of people had the unique opportunity to drive to the Winton Station and tour it with Minnesota Power, taking in views of the surrounding lake area from atop the concrete dam and intake manifold as well as from inside the copper-top brick pumping station. The tour was part of Minnesota Power's rededication ceremony of the 91-year-old Winton Station. The



electric power company is highlighting its recent investments in its 11 Minnesota hydroelectric stations this year with its Hometown Hydro Celebration ceremonies. The tour highlighted the history of the hydro station, pointing out remnants from its past, including the now green-stained copper roof and several white military guard shacks. Minnesota Power's CEO, Al Hodnik, said the installation of a copper roof showed how the area's mining and logging economy was booming at the time of the hydro station's construction in the early 1920s. The dam played a significant role in powering the iron ore mines, and because of this, was an important asset to the community, especially during World War II when local iron ore was the nation's backbone in producing military equipment.

During the great war, the hydro station had military guards on site for protection against potential enemy planes. The windows were also painted black to prevent enemy spies from looking in. Before 1996, when the operational control was switched from Winton to the Thomson Hydro Station on the St. Louis River near Carlton, the Winton station wasn't automated and required a full crew of hands to operate. Hodnik told folks on the tour old stories he's heard from some of these old-time workers. One such story told of the good times workers would have in the down times catching white -fish out of the pumping station's window on the Kawishiwi River. Along with the station tour, Hodnik presented service awards to County Commissioner Mike Forsman, Ely

Public Utilities Commission's Kurt Soderberg, and the Winton Station's long-time superintendent – now retired – Jack Hautala.

Minnesota Power is reinvesting in its hydropower system as part of its EnergyForward plan, which aims to reduce its carbon emissions by moving toward renewable energy such as hydropower and wind power. Its most notable recent hydropower project was rehabilitating the Thomson Hydro Station after it was severely damaged in the June 2012 flood in southern St. Louis County. The Thomson Station went back into commission in May.

The Winton Station has also undergone recent improvements. In 2007, Minnesota Power finished replacing the station's original wooden water-intake pipes with concrete culverts. And last year, the company began replacing the Birch Lake Dam's wooden dam with concrete. This project is expected to be completed later in the fall. Together, the Birch Lake Dam and Winton Dam manage the flow of water between the Birch Lake Reservoir, Garden Lake Reservoir and Fall Lake. The Winton Station utilizes the 67-foot drop of the Kawishiwi Falls to generate four megawatts of power per year for the Iron Range energy grid system and requires about 1,000 cubic feet per second of water to reach full production. Currently, Minnesota Power engineers are in the designing stage of rebuilding the Winton Station. The project will entail cleaning the station's two turbine generators and rebuilding the entire mechanical portion to make it more efficient, according to Minnesota Power's lead hydro engineer, Chris Rousseau. Minnesota Power expects the project to be finished by 2016.

(It took some hydro to get there.)

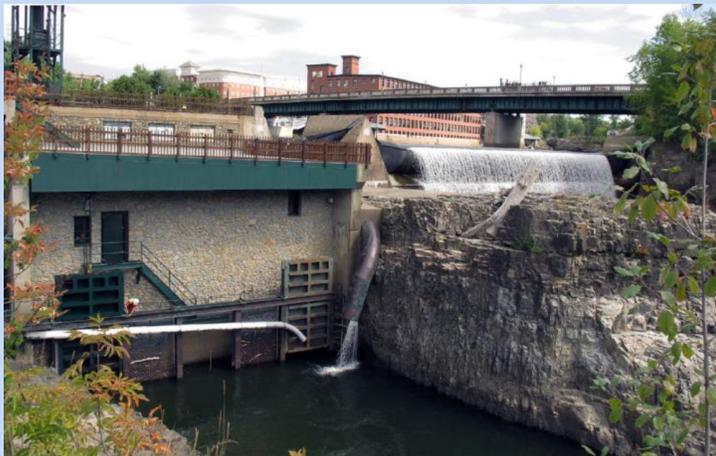
### **Vt. utility goes to 100% renewable power sources**

By Wilson Ring, Associated Press, September 15, 2014, gazettenet.com

Burlington, Vt. — Vermont's largest city has a new success to add to its list of socially conscious achievements: 100 percent of its electricity now comes from renewable sources such as wind, water and biomass. With little fanfare, the Burlington Electric Department crossed the threshold this month with the purchase of the 7.4-megawatt Winooski 1 hydroelectric project on the Winooski River at the city's edge.

When it did, Burlington joined the Washington Electric Co-operative, which has about 11,000 customers across central and northern Vermont, which reached 100 percent earlier this year.

"It shows that we're able to do it, and we're able to do it cost effectively in a way that makes Vermonters really positioned well for the future," said Christopher Recchia, the commissioner of the Vermont Department of Public Service. It's part of a broader movement that includes a



statewide goal of getting 90 percent of Vermont's energy from renewable resources by 2050, including electricity, heating and transportation. Across the state, Vermonters are urging their electric utilities to provide them with renewable sources of power, and the utilities are listening, Recchia said. It's also a growing movement across the country, as governments and businesses seek to liberate themselves from using power produced by environmentally harmful fossil fuels. Diane Moss, the founding director of the Southern California-based Renewables 100 Policy Institute, said that she wasn't sure if any other communities as large as Burlington — a city of 42,000 — have reached 100 percent, but that many are working on it. "It's these front-runners that are showing that it's possible," Moss said. Nearly 1,000 businesses both large and small and many communities have also committed to 100 percent, she said.

Greensburg, Kansas, almost wiped out by a 2007 tornado, rebuilt with energy efficiency in mind. A 12.5-megawatt wind farm went online in 2009, producing electricity in excess of that consumed by the community of 850, said Administrator Ed Truelove. "We're trying to be as sustainable a community as we can be," Truelove said. For both Burlington and Washington Electric, reaching 100 percent was the result of a yearlong strategy to wean themselves from traditional sources of power in favor of renewables. Utility officials in the lakefront city known for its liberal politics and extensive social service network first began discussing becoming 100 percent renewable a decade ago. Four years later they realized it could be done. "The transition in thought from 2004 to 2008 was 'We want to do this' too, 'This actually makes economic sense for us to do this,'" said Ken Nolan, the manager of power resources for Burlington Electric. Neither utility claims that each of their customers' lights comes from renewable sources all the time. When the wind isn't blowing and the rivers are low, they will buy power from traditional sources that include electricity generated from fossil fuels.

When the resources are right, though, they get more than they can use, and the difference is sold to other utilities. Over time, they sell more than they buy. Another caveat that, to some, minimizes the 100 percent achievement is that both Burlington and Washington Electric sell renewable energy credits for the renewable power they produce to utilities in southern New England where their value is highest. In turn, they buy less expensive credits from other sources to offset the credits they have sold. Sandy Levine, of the Vermont office of the Conservation Law Foundation, commended Vermont utilities for seeking renewable sources of power but questioned the credit trading. "They are selling the renewable energy credits to customers in other states. Those customers have the renewable and clean energy benefits of that power," Levine said. "Simply using accounting measures to make claims about clean energy doesn't get us there." Patty Richards, Washington Electric general manager, said the utility does sell high-value credits and then buys less expensive credits, which help keep rates low and ensures their power is 100 percent renewable. "It's like if you get a big old car you're never going to use, you let somebody rent your car, then you rent back a little smart car or a scooter or something because you don't have the need," Richards said. Taylor Ricketts, the director of the Gund Institute for Ecological Economics, an interdisciplinary research center that works on sustainability issues at the University of Vermont, a Burlington Electric customer, said reaching 100 percent was a big achievement. "It definitely makes me feel better here at UVM to know that every time I turn on a light switch or fire up my computer or anything else, to know that it's 100 percent renewable," he said.

---

(New York has a surprisingly good water supply.)

### **New Hydroelectric Plant to Be Built for New York**

By Sam Roberts, Sept. 15, 2014, nytimes.com

The city is planning to build a \$72 million hydroelectric power plant at its Cannonsville Reservoir. Credit New York City Department of Environmental Protection. It seems as natural as, well, water: Harness the energy potential of a 95-billion-gallon reservoir to run four turbines and generate electrical power cleanly and at a profit. Having overcome potential hurdles ranging from drought-stricken rafters on the Delaware River to the endangered dwarf wedgemussel and northern wild monkshood, New York City is tapping the vast resources of its upstate reservoir system to commission a new hydroelectric plant. The plant is projected to generate 14 megawatts of electric power, which the city would sell to the New York power grid. That is enough to provide electricity, on average, to 6,000 homes. By not using oil or coal to generate electricity, it is estimated that the plant would avoid the emission of 25,620 metric tons of greenhouse gases annually, or the equivalent of removing 5,400 cars from the road. This would be the largest hydroelectric development in New York State in more than two decades and the first time power would be generated directly from a Delaware River branch.

The city is building the \$72 million plant, which is expected to produce about \$2 million a year in revenue from the sale of electricity.

Construction is scheduled to begin in 2016. "It's not going to be a big cash cow, but it's sustainable and we will make the money back in the long run," said Emily Lloyd, the commissioner of the city's Department of Environmental Protection.



Cannonsville is the newest and westernmost among 19 reservoirs and three lakes that collectively supply the city with water through an engineering marvel of interconnecting tunnels. Begun in 1842 as the Croton Aqueduct in what is now Westchester County, the system serves nine million customers in the state and can hold about 580 billion gallons of water — 95 percent of which is delivered by gravity. Under an environmental resiliency plan initiated by former Mayor Michael R. Bloomberg and continued by the de Blasio administration, the city has been exploring both how to protect the vast reservoir system and how to extract energy from the one billion or so gallons of water that flow from it every day. The goal of the city's sustainability and resiliency campaign, PlaNYC, is to reduce carbon emissions from fossil fuels and other sources 30 percent by 2030. Two city power plants built in the 1950s generate power as water flows from one reservoir to another, as do two others, one owned by the state power authority and one privately. Both were built in the 1980s and pay a commission to the city on their sales of electricity.

The new plant at Cannonsville, in western Delaware County, about 120 miles northwest of the city, will generate power from water flowing from a spillway directly into the Delaware River. Under a 1954 United States Supreme Court ruling, the city can take up to 800 million gallons daily from the Delaware River as long as it ensures adequate flow downstream to sustain recreation and aquatic life in New Jersey and elsewhere. The power plant required federal regulatory approval, including guarantees that the flow to the river would not be interrupted and that endangered species, such as the northern wild monkshood and the dwarf wedgemussel, which have been seen in the region but not at the project site, would not be affected. Paul V. Rush, the city's deputy commissioner for water supply, said other potential power-generating possibilities had been considered, such as generating power from water flowing through the vast tunnels connecting the reservoirs. But that was deemed impractical because it would impede the flow and would restrict the Environmental Protection Department's flexibility to shift the supply among reservoirs, depending on water quality.

The department is identifying other energy-saving initiatives, including using methane captured from a sewage treatment plant in Brooklyn to power the plant and to produce natural gas for sale as well as generating electricity for a plant on Staten Island by installing solar panels.

The Cannonsville plant would be the system's third biggest, after Neversink and East Delaware, both city-owned. Last winter's severe weather led to higher electric rates so the two plants netted more than usual for the fiscal year that ended June 30, about \$8.2 million from the wholesale power market. The Cannonsville Reservoir, which was completed in 1964, is about 140 feet deep and was created by damming the West Branch of the Delaware River, displacing nearly a thousand residents. Water releases from the dam's spillway are now timed scientifically, both to coincide with the weather and to maintain a basin downstream to absorb rainfall and reduce flooding. "We have real-time weather forecasts, so we understand the risks of releasing water downstream and that it will not impact on a reliable supply for the City of New York," Mr. Rush said. Ms. Lloyd said other power plants also might be built and department engineers had also looked at capturing the flow from water and sewer mains in the city. But after investigating "space,

technology and issues of economic feasibility at 30 sites,” she said, “this was the one that gave the most power.”

(Does this take rain from someone else?)

### **Curious Mind: Cloud seeding boosts hydroelectric production**

By Kimberly Williams-Brackett, 9/16/14, magicvalley.com

Q: Tell me about Idaho Power’s seeding clouds for more rain.

A: “Idaho Power’s cloud-seeding program increases snow accumulation and provides increased generation at the company’s hydroelectric facilities,” said Brad Bowlin, spokesman for Idaho Power. “It also benefits skiers, snowmobilers, agriculture, fish and other wildlife habitat, aquifer recharge and water quality. “The original program was established to increase snow accumulation in the south and middle forks of the Payette River watershed.” The Payette, a major tributary of the Snake River, originates in the Sawtooth and Salmon River mountains. “In 2008, Idaho Power expanded the program by enhancing an existing program operated by a coalition of counties and other stakeholders in the upper Snake River system above Milner Dam,” Bowlin said. For the 2013–14 winter, the program used 17 remote-controlled, ground-based generators and one airplane for the Payette Basin. The Upper Snake River Basin, he said, had “19 remote-controlled, ground-based generators operated by Idaho Power and 25 manual, ground-based generators operated by the coalition. Idaho Power provides meteorological data and weather forecasting to guide the coalition’s operations.”

Jackson Lake, Palisades, Grassy Lake, Island Park, Ririe, American Falls Dams and Lake Walcott comprise the Upper Snake system. Idaho Power first contracted for cloud-seeding in the winter of 1996–97. Since 2003, it has operated its own cloud-seeding program. Annual snowpack in the Payette River Basin increased by 5 percent to 15 percent, depending on the year, with an average increase of nearly 13 percent, Idaho Power analyses show. “Idaho Power estimates cloud seeding in the Payette provides nearly 200,000 additional acre-feet of water for the Hells Canyon Complex each year. That amount of water can generate approximately 100,000 megawatt-hours, or enough to power roughly 7,900 homes.” By introducing more ice nuclei into winter storms with water vapor and the right temperatures, those tiny silver iodide particles increase precipitation, said Bowlin. “Idaho Power uses two methods to seed clouds: ground generators at high elevations, and airplanes that release special flares into storm clouds. We work closely with federal, state and local authorities to ensure our cloud-seeding operations comply with all relevant environmental and land-use guidelines,” he said. Silver iodide has been used for winter cloud seeding in 11 of the 17 western states for decades, and no harm to the environment has been documented. Savings are passed on to Idaho Power’s customers. In 2006, for example, high stream flows augmented by cloud seeding helped decrease customers’ rates by an average of 19.3 percent. The cloud seeding season runs from Nov. 1 through April 15.

(We need more of these!)

### **Northfield Mountain hydroelectric plant seeks to boost storage capacity during winter**

By Richie Davis, Recorder Staff, September 18, 2014, gazettenet.com

Northfield, MA — Owners of the Northfield Mountain hydroelectric project have sought permission to change its operating license temporarily this winter to boost storage capacity of its mountaintop reservoir so the region’s power supply can have additional capacity. The application filed last month by FirstLight Hydro Generating Co. to the Federal Energy Regulatory Commission for a temporary license amendment is not entirely unprecedented.

But the application — allowing an additional 22 feet of pumping capacity to its 5-billion-gallon reservoir between Dec. 1 and March 31 — comes with a twist — the owners of the 42-year-old hydroelectric plant are also applying to FERC for a new operating license, for which a series of 42 studies are being done on the river system. And rather than allowing the plant to boost its peak-demand production for specific operating emergencies, the application appears to be for the entire four-month period, according to the nonprofit Connecticut River Watershed Council.

The underground pumped-storage power plant, which uses water from the Connecticut River pumped up the mountain overnight, when electricity prices are lowest, and releases it when there is peak demand and prices are highest, can provide quick startup for the region's electricity grid, going from standby to 1,143 megawatts in six to eight minutes. For that reason, it could come in handy this winter, when the 625-megawatt Vermont Yankee nuclear plant and 587-megawatt Salem Harbor coal-fired plant will not be available to feed the region's electricity needs, FirstLight states in its application to the Federal Energy Regulatory Commission. Because the Northfield Mountain's upper



reservoir was built in the 1960s with extra storage capacity to accommodate the then-planned diversion of river water to augment metropolitan Boston's water supply via the Quabbin Reservoir, it requires no additional construction, according to the application. There is also no change in the hydraulic capacity of the plant's pump-turbines and no change in the maximum generating pumping capacities, and no change in established maximum and minimum elevation limits for the Turners Falls Impoundment — the roughly 20-mile stretch of river northward from the Turners Falls Dam that serves as the project's lower reservoir. The increased operating flexibility, the application states, "would provide significant benefits to the reliability of the New England Bulk Power Supply System. First, when certain fuel is scarce or subject to scheduling limitations, (Northfield) generation ... could be increased, thus flexibly addressing system needs and permitting ISO-NE to preserve fuel at such locations for use in extreme conditions. Second, (it) ... could serve as an additional operating reserve in New England and provide a flexible, quick-start resource, to address fuel supply-related or other contingencies that may arise this winter. Lastly, the improved operational flexibility will allow FirstLight to respond to other unforeseen system emergencies." Raising the reservoir's upper limit by 4 feet and its lower limit 18 feet increases its storage capacity by nearly 25 percent, translating to an additional 1,990 megawatt hours of generation, according to the filing.

FirstLight terms the amendment "necessary and in the public interest," especially since retirement of Vermont Yankee and Salem Harbor will test the flexibility and fuel diversity of the overall generating system "to ensure safe, reliable and economic operation for the region."

ISO-New England spokeswoman Lacey Girard said, "Given the resource performance challenges and reliability risks to the grid during the past two winter seasons, ISO New England proposed — and FERC accepted — a Winter Reliability Program to help ensure that the region will have the power it needs if we experience extreme weather during Winter 2014/2015." With increasing constraints on the natural gas pipeline system, and several large generators, including Vermont Yankee and Salem Harbor in the Greater Boston area, retiring in 2014, the ISO expects the situation to continue to be precarious through the coming winter and for the next few years." FirstLight spokesmen John Howard and Carol Churchill were unavailable for comment.

Environmental issues Although the state departments of Environmental Protection and Fisheries and Wildlife responded to a draft of FirstLight's plan and said they saw no major problem with the proposal, Andrea Donlon, river steward for the Watershed Council, said she is concerned that the current request "does not ask for the change under limited emergency conditions, but for the entire period ... Moreover, the purported need to provide ISO-NE with additional resources to deal

with a potential shortage of energy is vague and potentially unjustified.” Donlon said she does not believe that any of the river studies for FERC’s long-term plant relicensing are scheduled during the winter, but she questions the impact of pumping additional river water up the mountain on pulling more fish up through the system, as well of the effect of the additional operations on streambank erosion. Like Donlon, Franklin Regional Planning Board member Tom Miner — a former watershed council director who is also member of a panel overseeing streambank erosion related to the Northfield Mountain plant — said he is concerned that FirstLight seeks to have the more flexible regimen incorporated into a new operating license application, scheduled to be formally filed in April 2016. “It’s somewhat of a game that’s being played,” Miner said. “They want to have as much flexibility as they can get in order to generate more revenue. ... This gives them the ability to use a greater part of the capacity of the upper reservoir to take more water out of the river. The thing that concerns us right now is that we’re just in the midpoint of a number of studies related to the new license. If they do end up drawing the river down in wintertime, and have it flow up the mountain and back down again, what’s that going to do to results of some of the studies that are going to be the basis of the new license application? It’s a new unknown.”

(Some people can dream!)

### **Futuristic Hydroelectric Tidal House powered by wave and solar energy**

18 September, 2014, rchitectureanddesign.com.au

Resembling some kind of spiky sea urchin from the future, Margot Krasojević’s conceptual Hydroelectric Tidal House is designed to sit on the edge of the ocean, harnessing tidal and solar energy to generate electricity. The sculptural home is made of a fixed outer shell that has been cast in concrete, and a buoyant inner shell constructed from a lightweight, non-ferrous aluminium. Energy producing solar cells line the outer shell, with Krasojević proposing that the home be anchored to a beach in Llandudno, Cape Town, where it



could take full advantage of the abundant South African sun. The Hydroelectric Tidal House also features an electromagnetic turbine system that uses neodymium magnets and copper wire coils to induce an electric current when waves flood a porous space between the inner and outer shells. The energy is captured in a capacitor and converted into electricity, which is used as the primary power source for the house.



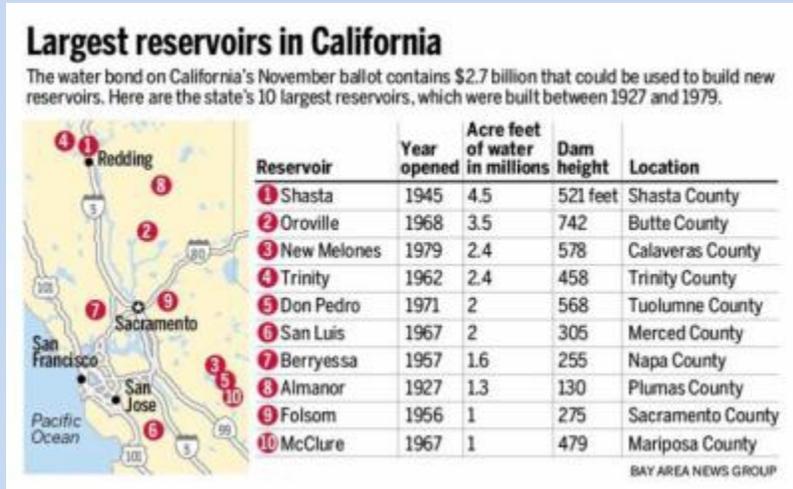
**Water:**

### **California drought: Dams part of drought relief bond package**

#### **No large government funded reservoirs have been built in 35 years**

By Paul Rogers, San Jose Mercury News, 09/12/2014, willitsnews.com

How much money drought-stricken California should spend to build new dams was a big part of the debate over the bill that Gov. Jerry Brown signed last month to put a \$7.5 billion water bond on the November ballot. Republicans and Central Valley Democrats who pushed hardest for new reservoirs highlighted the fact that California built many of the world's most ambitious dam projects during the 1950s, 1960s and 1970s, but a large state- or federally-funded reservoir hasn't been built in 35 years.



But why did the era of big dams end, when California has built new roads, schools, universities, hospitals and freeways?

Experts say there are a confluence of factors, from environmental laws to funding to a lack of suitable sites. Now supporters of new reservoirs are trying to start a new dam-building era. "We have lived off the investment and sweat of the World War II generation," said Paul Wenger, president of the California Farm Bureau Federation. "We have done nothing for the future generations but put them in a real bind." Their argument, with California mired in a third straight year of drought, carried enough weight for lawmakers to include \$2.7 billion for new water storage. Now, voters in November can decide whether the state should start digging again. The 10 largest reservoirs in California, linchpins of the water system for 38 million people and the nation's largest farm economy, were all built between 1927 and 1979. Shasta Lake, the massive inland sea on the Sacramento River near Redding, was finished in 1945. Oroville, the tallest dam in the United States, at 770-feet high on the Feather River in Butte County, was started under Gov. Pat Brown's building boom in 1961 and finished in 1968.



<sup>i</sup>This compilation of articles and other information is provided at no cost for those interested in hydropower, dams, and water resources issues and development, and should not be used for any commercial or other purpose. Any copyrighted material herein is distributed without profit or payment from those who have an interest in receiving this information for non-profit and educational purposes only.