

10/01/2010



## ***Some Dam – Hydro News and Other Stuff***



**Quote of Note:** *“Everyone loves justice in the affairs of others.” --Italian saying*

**“Good wine is a necessity of life.” - -Thomas Jefferson**

**Ron’s wine pick of the week: The Pines 1852 Pinot Gris, 2008 Columbia Gorge, Ore.**

**“No nation was ever drunk when wine was cheap.” - - Thomas Jefferson**

### ***Other Stuff:***

(Some conflicting language in article, but if passed it might help)

#### **Senators reveal stand-alone RES bill**

By Anna Austin, biomassmagazine.com, September 23, 2010

A bipartisan stand-alone bill proposing a national renewable energy standard (RES) would mandate sellers of electricity to retail customers to obtain 15 percent of their energy from renewable resources by 2012. Introduced by Sen. Jeff Bingaman, D-N.M., Sen. Sam Brownback, R-Kan., and several others, the Renewable Electricity Promotion Act of 2010 would require electric utilities to produce at least 11 percent of their power from biomass, wind, solar and other renewable sources of energy. The remaining 4 percent could be achieved through energy efficiency improvements. Utilities selling less than 4 million megawatt hours per year would be exempt from the requirements. The 43-page bill is nearly identical to the RES proposed in the bipartisan American Clean Energy Leadership Act, apart from a few date changes and scoring/technical corrections. Slated targets in the bill are 3 percent in 2012-2013, 6 percent in 2014-2016, 9 percent in 2017-18, 12 percent in 2019-2020, and 15 percent from 2021-2039. According to Bingaman’s office, the current sponsors are working to secure 60 co-sponsors so that the bill can be brought up for consideration before Congress adjourns later this year.

(Here’s a sobering and disappointing piece of news from Renewable Energy World:

*“Meanwhile, leadership in manufacturing is shifting from Europe to Asia as countries like China, India and South Korea continue to increase their commitments to renewable energy. In 2009, firms in China produced 40% of the world’s solar PV cell supply, 30% of the world’s wind turbines (up from 10% in 2007), and 77% of the world’s solar hot water collectors.”*



## Dams

(One way or the other, they always stick to the ratepayers. What they don't tell us is how much will the ratepayers have to pay for the makeup power?)

### Dam surcharge gets official OK

heraldandnews.com, September 17, 2010

Oregon utility officials gave PacifiCorp final approval to implement a surcharge on bills of its Oregon customers to help pay for removal of four hydroelectric dams on the Klamath River (Northern CA and Southern OR). Oregonians are expected to pay about \$200 million toward dam removal, which is a key aspect of the Klamath Basin Restoration Agreement and a related document specifically concerning dam removal, the Klamath Hydroelectric Settlement Agreement. Oregon Public Utilities Commission officials acknowledged in their final report that the company's ratepayers would be responsible for significant future costs regardless of the fate of the dams. However, the dam removal agreement provides a more certain path and puts a reasonable cap on costs. "Due to significant tangible and intangible benefits associated with the KHSA, we conclude it is in the best interest of customers and find the KHSA surcharges to be fair, just and reasonable," the report said.

(Sounds like a warning for owners of rubber dams. I liked some of the comments on this article. Here's an example – "Ok, how much did it cost for an "independent examiner" to determine what anyone who has lived in the valley through two summers could tell you?")

### Independent report: Heat, sun caused dam burst at Tempe Town Lake

Dan Zeiger, Tribune, September 22, 2010, eastvalleytribune.com

An independent examiner has determined that years of heat and sun exposure to aging bladders caused the damage that led to a section of the western dam at Tempe, AZ Town Lake giving way on July 20. SEA Ltd. inspected one of the 11-year-old dam bladders at its Columbus, Ohio, facility and concluded in a nine-page report that "intra-carcass pressurization" - separation of internal layers - led to the burst. "Experts in the field have cited the age and heat combination as the reason," said Jeff Kulaga, Tempe assistant city manager. "We are accepting that evaluation and are moving forward." Before the burst, Kulaga said, Bridgestone determined that the bladders were deteriorating faster than expected and arranged an agreement with Tempe to replace them at no cost to the city.

"The jointly-commissioned report confirms what Bridgestone said as early as 2007 about the climate conditions and the long-term effects the environment has had on the rubber bladders in Tempe," James Wheeler, director of operations and finance for Bridgestone, said in a statement. The four bladders are being replaced - the lake is expected to open in early November - and precautions will be taken to protect them from the sun. They will be shaded by a new pedestrian bridge, and a sprinkler-watering system will provide additional cooling. Under those conditions, the bladders should last for the duration of a five-year lease agreement between Bridgestone and Tempe. By November 2015, a long-term dam structure will be in place, and Kulaga said that a bladder system and a steel-hinge gate are among the options. "The report from SEA and our experience with rubber bladders will all be taken into account in our future analysis of a (long-term structure)," Kulaga said.

(Not my photo – it came with article and shows wrong dam, i.e. Theodore Roosevelt dam, AZ)

### Work Continues to Improve Safety of Bluestone Dam

A \$48.5 million contract is expected to further increase its safety.

wnstv.com, September 24, 2010, By Courtney Clark

Another multimillion dollar contract will be put to use at the Bluestone Dam (New River, West VA). Awarded by the U.S. Army Corps of Engineers, they say it's all about improving the dam's safety. "The sole purpose of the project is really to rehabilitate the Bluestone Dam," Project Geologist Coen Bauders said, "and also basically make it safer." Bauders says they've been partly finishing the dam's original design by extending gates and installing more than 100 anchors. A new



\$48.5 million contract is expected to further increase its safety. "The next phase consists of installing a scour pad in front of our penstock gates," he explained, "so that we can use those in a more safe manner." Some people say they wish it would happen more quickly. "Straight up in my opinion, I think it's took a little bit too long," Larry Francisco, a fisherman from Beckley, said. But everyone agrees it needs to be done. "For one thing, the dam's probably starting to get weak after all these years," added Francisco. "There is a possibility of having a flood condition to where the dam wouldn't necessarily be within acceptable risk criteria," Bauders said. That's why they've decided to continue with phase three of the safety assurance project, which Bauders says has two additional phases in the plans. "It's not like building a house or building any product in a factory," he continued. "What we're doing is, we're taking an existing structure and we're upgrading it. We have to do that in a safe manner and you know that takes a little bit of time. But we're working as safely and as quickly as we can."

(Excerpts)

(This dam removal project has been a long-term evolving mess that it seems is now resolved)

## California American Water Files Application for Removal of San Clemente Dam

benzinga.com, 09/24/10, by Benzinga Staff

PACIFIC GROVE, Calif. -- (BUSINESS WIRE) -- California American Water filed an application with the California Public Utilities Commission (CPUC) on September 22, 2010 requesting permission to remove San Clemente Dam on the Carmel River in order to resolve seismic safety concerns associated with the dam and restore critical habitat for the steelhead trout. "From an engineering and environmental perspective, this is a landmark project," said California American Water president Rob MacLean. "Our innovative method for dealing with the sedimentation behind the dam and the level of public-private cooperation which has made this plan a reality will serve as a template for the removal of other obsolete dams across the country."

California American Water is partnering with the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service and the California State Coastal Conservancy to implement the dam removal project while minimizing cost to its ratepayers. California American Water has committed \$49 million and the dedication of 928 acres where the dam is located as parkland. The Coastal Conservancy and NOAA committed to raise the additional \$35 million needed for the removal project through a combination of public funding and private donations.

The San Clemente Dam is a 106-foot high concrete-arch dam built in 1921, eighteen miles from the ocean on the Carmel River, to supply water to the Monterey Peninsula's then-burgeoning population and tourism industry. Today the reservoir is over 90 percent filled with sediment and has a limited water supply function. In 1991, the California Department of Water Resources, Division of Safety of Dams agreed with a California American Water consultant's assertion that San Clemente Dam did not meet modern seismic stability and flood safety standards. The Department of Water Resources and Army Corps of Engineers studied many ways to ameliorate the safety issues including strengthening the dam and removing the dam. The January 2008 Final Environmental Impact Report and Environmental Impact Statement ("EIR/EIS") regarding San Clemente Dam's stability contains analysis of a Reroute and Removal Project, which would address the seismic and flood safety risks associated with San Clemente Dam by permanently re-rerouting a portion of the Carmel River and removing the dam. Under this proposal, the Carmel River would be rerouted to bypass the 2.5 million cubic yards of silt that have accumulated behind the dam, thereby avoiding dredging, which has been deemed infeasible. The primary benefits of the Reroute and Removal Project are that it improves the Carmel River environment by removing the dam, which serves as a barrier to fish passage, and satisfies government agencies' concerns that strengthening the dam, as opposed to removing it, could further threaten the South Central California Coast Steelhead and violate the federal Endangered Species Act. -----



*Hydro*

Press Release

### NHA Supports RES Legislation

National standard could create jobs and clean energy resources

Washington, D.C. (September 21, 2010) – The following is a statement from National Hydropower Association (NHA) Executive Director Linda Church Ciocci responding to the introduction of the bipartisan RES proposal:

*“The National Hydropower Association supports a national renewable electricity standard as a way to create tens of thousands of jobs, while expanding clean, reliable hydropower in every state. Along with the extension and expansion of key tax incentives, such as production tax credit parity for hydropower resources and a new investment tax credit for energy storage projects, passing a national RES is crucial to creating jobs and building America’s clean energy resources. We applaud Senators Collins (R-ME), Bingaman (D-NM), Brownback (R-KS), and Dorgan (D-ND) for recognizing the urgent need for a national Renewable Electricity Standard. NHA will continue to work with policymakers and stakeholders on passing an RES that maximizes hydropower’s contribution to our renewable energy future.”*

(Hydropower and Dams - Click on the link for entire article)

## Multiple benefits for dams

carbon-based-ghg.blogspot.com, by Brian Thomas, September 20, 2010

[Some pro-dam propaganda from Patrick Reynolds in International Water Power and Dam Construction](#): A multiplicity of water needs can be served by hydro and multipurpose projects, and in the near- to medium-term there is going to be relatively greater demand to employ them as an adaptation strategy to the anticipated increase in weather instability, as projected from the effects of climate change, notes [The World Bank Group in its Directions in Hydropower](#) report, which was published last year.



The World Bank says it ‘is keenly aware of this timely and important period for hydropower’ though adds that this particular use of water resources will be only part of the picture in future. It says that given the increasing importance of climate change, water security, and regional cooperation, the bank has consequentially a wider view that ‘encompasses water infrastructure that serves multiple objectives, among which energy may be a subsidiary goal’. The Directions report adds, ‘As part of a flexible, well-planned water resources infrastructure, hydropower can help countries manage floods and droughts and improve water resources allocations across a complex set of users’. It goes on, ‘Multipurpose hydropower can also support adaptation to increasingly difficult hydrology by strengthening a country’s ability to regulate and store water and so resist flood and drought shocks.’ But before facing any climate change impact on hydrology, some countries are already experiencing great water-stress, prime among them being Ethiopia, Haiti and Niger, the World Bank said in March, when releasing an internal review of support given to water-related activities over 1997-2007. Almost a third of all projects worldwide approved by the World Bank for funding since 1997 have been water-related. In every country, from the most water-stressed to those far less strained – possibly even with an abundance of hydrological resources, there is far more attention demanded, and being given now, to a wider range of planning factors, including strategies being developed around river basins, large and small. One such major planning initiative is underway for the river Nile – the world’s longest – and its many regional, national and local sub-catchments....

(I guess they should be happy - \$19 Million is not pocket change.)

## Seattle, Pend Oreille County compromise over hydroelectric dam

Seattle agreed on Monday to settle a dispute with Pend Oreille County that will allow the city to pursue the relicensing of its hydroelectric dam that generates about 40 percent of the city’s power.

By Emily Heffter, Seattle Times staff reporter, [seattletimes.nwsourc.com](http://seattletimes.nwsourc.com)

Seattle, WA compromised Monday with a remote Eastern Washington county that’s home to the city’s biggest hydroelectric dam, ending a two-year dispute. Cash-strapped Pend Oreille County will get about \$3 million to put toward a new school and Seattle can move forward with its federal dam-relicensing process — something the disagreement threatened to hold up. In all, the Seattle City Council approved \$19 million in payments to the county over the next 10 years. Seattle City Light originally offered about \$15 million. Pend Oreille County commissioners initially said they wanted \$30 million. “I’m pretty happy with that increase,” said Pend Oreille County Commissioner Laura Merrill. “I feel like that was a good agreement for us.” Pend Oreille County, which has three commissioners and a population that hovers at about 13,000, was the underdog in its fight with Seattle. Over the years, the county had seen its impact payments increase only

with inflation while the Boundary Dam, fueled by the rushing waters of its biggest natural resource, the Pend Oreille River, became a big moneymaker for Seattle's electrical utility. **Seattle gets about 40 percent of its power from the dam.** Meanwhile, Pend Oreille County's economy struggled. County commissioners hired a big-city negotiator, got a bill passed through the state Legislature, and finally intervened in the federal relicensing process. When Seattle built the dam 40 years ago, it also built a grade 7-12 school in the northern part of the county. Since then, enrollment has plummeted, the roof started leaking, and seven local bond measures have failed. Selkirk School District Superintendent Nancy Lotze wanted City Light to pay the district in a lump sum so she could replace the school, but City Light refused to negotiate with her. In the end, the district in Metaline Falls got about \$3 million, which will be paid over three years. **"It's certainly not what we asked for, but it's a jump start, and it's the best jump start we've had in the last 40 years,"** she said Monday.

(This is a test case that could cause a spread of similar claims in other states. It's a backdoor tax collection that just might apply, for instance, to an irrigation district since the irrigators make money from the food they produce.)

### **Groups join PPL Montana in dams lawsuit**

greatfalltribune.com, SEPTEMBER 24, 2010

HELENA, Montana (AP) — **The Montana Farm Bureau Federation and other groups are supporting PPL Montana in asking the U.S. Supreme Court to stop the state from seizing ownership of riverbeds and forcing rent payments.** PPL filed its appeal last month from a state case decided earlier in the year. **The Montana Supreme Court ordered the company to pay \$40 million in rent and damages for not paying past rent for land its dams occupied from 2000 through 2007.** The company will also owe more in future rent. Lee Newspapers State Bureau reports that several others are also asking the nation's high court to take the appeal, including a group representing irrigators and The Cato Institute. **They argue the state court decision means other river users could eventually be charged.**

(And now they are in the process of removing portions of the project:

<http://www.redding.com/news/2010/jul/05/dam-removal-project-starts/>)

### **The Battle Creek Hydroelectric System**

blogs.redding.com, September 21, 2010

The Battle Creek Hydroelectric System was a massive hydroelectric system established by H. H. Noble in 1900. (Nobles' Castle, the round rock castle-like house that was built on the edge of Shingletown Ridge was his). The system was located beside Battle Creek and its tributaries in Shasta and Tehama counties and was the heart of Northern California Power Company's power system; Northern California Power was the predecessor of PG&E. The power system included four powerhouses: Volta, South, Inskip and Coleman. It also included storage reservoirs: Nora Lake, Grace Lake, Macumber Reservoir, Manzanita Lake, Baldwin Reservoir, Coleman Forebay and North Battle Creek Reservoir.

Volta Powerhouse at Manton built in 1901; demolished by PG&E in the 1980s



(Oops, they just woke up – there's a hydro project down the road)

### **Residents concerned over proposal to build hydroelectric power plant on Applegate Dam**

By Kaylin Krashesky, kdrv.com, September 21, 2010

RUCH, Ore. - A proposal to retrofit the Applegate Dam for hydroelectric power is meeting with opposition. The hydroelectric power plant, to be built at the base of the Applegate Dam, has already been approved by the Federal Energy Regulatory Commission. At a meeting Tuesday at the Ruch Public Library, local residents voiced their concern over how the hydroelectric power would be distributed. **Power lines may be raised by 15 feet if the project goes through, something residents say would affect their property values.** Many are wondering why the power lines aren't being put underground. **"It depends on where you live. For some people, it will make an enormous difference. They can't see the lines.** They'll suddenly have lines in front of their windows. For other people, it doesn't matter, because the power lines run down by the road,"

Concerned Resident Margaret Della Santina said. Symbiotic, the contractor hired to do the \$19 million project, hopes to start construction next spring. It's expected to take about two years to complete.

## Alcoa fights for water permit at N.C. hearing

wral.com, 9/27/10

RALEIGH, N.C. — A North Carolina judge is deciding whether a state agency followed its rules by issuing a water permit that Alcoa Inc. needs to sew up its fight over a series of hydroelectric dams. State Administrative Law Judge Joe Webster begins hearing the dispute on Monday. He'll decide whether a certificate issued last year by the Division of Water Quality was legitimate. The division certified that if its conditions were followed, Alcoa's wholly owned subsidiary can operate the dams while protecting nearly 40 miles of the river and its reservoirs. Gov. Bev Perdue, former Gov. Mike Easley and Stanly County officials have opposed the company's bid for a new operating license of up to 50 years. They want someone else to profit from the dams to encourage local job growth.



## Water

(Too much water and nowhere for it to go! This has got to be one of the most unusual water situations in a long time.)

### North Dakota lake swallows land and buildings

Associated Press | columbustelegram.com, September 22, 2010

It's been called a slow-growing monster: a huge lake that has steadily expanded over the last 20 years, swallowing up thousands of acres, hundreds of buildings and at least two towns in its rising waters. Devils Lake, ND keeps getting larger because it has no natural river or stream to carry away excess rain and snowmelt. Now it has climbed within 6 feet of overflowing, raising fears that some downstream communities could be washed away if the water level isn't reduced. And those worries are compounded by another problem: Scientists believe the pattern of heavy rain and snow that filled the basin is likely to continue for at least another decade. "It's a slow-moving torture," said 72-year-old Joe Belford, a lifelong resident of Devils Lake and a county commissioner who spends most of his time seeking a way to control the flooding and money to pay for it. No other place in America has faced such a dilemma. The nation's only other significant "closed-basin" lake is the Great Salt Lake, which was in danger of flooding housing developments in the mid-1980s. But shortly after the state spent \$70 million on huge pumps, a dry spell began. Those pumps now stand idle. "We're unfortunately or fortunately \_ I don't know what it is \_ pretty unique," said Dick Johnson, mayor of Devils Lake, which has nearly 7,000 residents. The constant flooding "doesn't have the immediate impact that a hurricane or typhoon might have, but it's devastating."



Since the water began rising in the early 1990s, more than 400 homes around the lake have been relocated or destroyed. The lake, about 160 miles northwest of Fargo, is the largest freshwater body in North Dakota, with an estimated shoreline of at least 1,000 miles. It's up to 75 feet deep and has attracted tourists from across the nation with excellent fishing and other recreational activities. But local people and politicians are fretting that the lake is a catastrophic flood waiting to be released in their



direction. In the tiny town of Minnewaukan, the lake was once 8 miles away. Today it is lapping at the community from three sides, and residents are begging for help. "This is tearing people apart," said Minnewaukan Mayor Trish McQuoid, fighting back tears. Proposals include moving the entire town to higher ground. On Monday, the lake stood at just over 1,451 feet above sea level. If it climbs above 1,458 feet, its water will spill into the Sheyenne River, which flows through southeastern North Dakota before it joins the north-flowing Red River and heads into Canada. Among the threatened communities along the Sheyenne is Valley City, west of Fargo. The mayor there said a spillover could raise the river more than 5 feet above a record 2009 flood, which forced most of the town's 6,300 residents to evacuate. That might flood up to half the city.

By the end of 2010, the federal government will have spent more than \$1 billion to ease the threat, buying flooded property, building dikes and making other improvements. That figure does not include a \$27 million floodwater-diversion channel built by the state on the west end of the lake. It also costs \$330,000 a month for the electricity for pumps to take 1 inch off the lake. All of those measures are considered temporary. The final solution \_ and its cost \_ is not known. "The issue of stopping the flooding and trying to get water out of that lake is complicated," said Sen. Byron Dorgan, a North Dakota Democrat. "If it weren't complicated, it would have been solved long ago." Devils Lake has nearly quadrupled in size since the early 1990s, flooding nearly 150,000 acres of land, inundating a million trees and destroying hundreds of homes and farm buildings. Many of those who lost property to the water were eventually bought out by the state or federal governments. The buyouts included the two tiny towns of Penn and Churchs Ferry, although some people remain in both communities. Scientists with the U.S. Geological Survey say there's no way to predict exactly when a normal weather cycle will return. But the agency's models show a 72 percent chance that the current pattern will continue for at least 10 years. Climate studies based on tree rings and lake sediment indicate that similar wet periods occurred in the Devils Lake Basin many times during the past 2,000 years, the agency said. The last time the lake overflowed was sometime prior to statehood in 1889. A federal panel has been studying the lake, but it has not finished its report. Local officials say the recommendations should include creating a second flood-control channel on the east side of the lake and relaxing water-quality standards downstream to allow for the release of more water. "If they don't do that, we're probably cooked," Johnson said. Pumping water downstream has long raised opposition in southeastern North Dakota, Minnesota and even as far away as the Canadian province of Manitoba, which could receive some of the water from the Red River. Officials in those places fear the water would contaminate other waterways with harmful plants and fish and increase sulfate levels in the drinking water. Water high in sulfates, including salts, can taste bitter and act as a laxative. Officials in Fargo and West Fargo are seeking federal help to improve their water treatment facilities for Devils Lake water. The lake's sole natural outlet, a channel called the Tolna Coulee, is highly erodible and completely choked with sediment.

Madeline Luke, a Valley City doctor, suggests lining the outlet with concrete and storing more water upstream. She and others believe improving the coulee would prevent a wall of water from rushing downstream. "I don't think anybody thinks there's going to be any one thing that is going to solve it," Luke said. "How to address it in the most efficient, cost-effective and least environmentally destructive manner is up for discussion." Devils Lake officials are ready to take the issue to court, possibly to fight the federal government's water-quality requirements for lake runoff or to seek permission to build another drainage channel. The city has retained a Minneapolis law firm. The rising lake, which is owned by North Dakota, has provided some economic benefits, too, particularly in construction and recreation, generating higher sales tax revenue and increasing housing demand. Flooded farm fields are now a haven for sportsmen in search of walleye and other fish. Scores of Hmong and other Southeast Asian anglers come from hundreds of miles away to fish for white bass, which resemble a species native to their homelands. Fishing contributes an estimated \$40 million a year to the local economy. McQuoid, the Minnewaukan mayor, said she moved here from Minnesota four years ago so her husband could open a guide service. They later bought the general store. The lake has risen 5 feet since they arrived, forcing 13 homes to be moved or destroyed. It's also sparked a debate about saving the town. McQuoid said she had to tell one resident never to enter the store after he raised a ruckus in front of other customers over an emergency ordinance about sealing water and sewer lines in areas that could be flooded. "I've never been under so much stress my whole life. I feel it. I know what it's doing to me and others," she said. "But do I walk away now? No."

[\(Article that started it all\)](#)

### **Sen. Conrad backs dam at east end of Devils Lake**

**BISMARCK (AP) — North Dakota Sen. Kent Conrad and some state legislators are supporting a dam at Devils Lake's east end to prevent an uncontrolled water flow into the Sheyenne River.**

By: Associated Press, September 20 2010, [inforum.com](http://inforum.com)

BISMARCK, ND (AP) — North Dakota Sen. Kent Conrad and some state legislators are supporting a dam at Devils Lake's east end to prevent an uncontrolled water flow into the Sheyenne River. A North Dakota legislative committee on Monday endorsed a bill to set aside \$5 million for the project. The Legislature will consider it next year. Devils Lake's level is now above 1,451 feet. If it goes above 1,458 feet, salty lake water will begin spilling from the lake's east end into the Sheyenne River. Conrad and Ramsey County Commissioner Joe Belford told the committee that an uncontrolled flow would be a disaster. The legislation authorizes the building of a structure to control the flow. The project's details still have to be worked out.



## *Environment*

(This is an ominous event and could be the catalyst for removal of more large dams – only time will tell. One thing for sure, while there may be a push forward on hydropower there is an equal push backward, so hydro is not at this point making much headway!)

### **First step in removal of Elwha River dams begins**

**The first work has begun on the Elwha River in preparation of the largest dam-removal project ever in North America.**

seattletimes.nwsourc.com, September 19, 2010, By Lynda V. Mapes, Seattle Times staff reporter

LAKE MILLS, WA, Clallam County — It doesn't look like much, this bunch of heavy equipment chewing away at an alder forest, but it's actually the start of something big: the largest dam-removal project ever in North America. After decades of talk and planning and debate, the \$744,000 project by a Vancouver, Wash., contractor is the first work on the Elwha River in the dam-removal project. It's intended to get the river pointed in the right direction once the two dams start to come down about a year from now. And with that, officials expect, the prized but threatened chinook salmon population also will head in the right direction — upriver by the tens of thousands.

About 750 dams have been taken out around the country. But the Elwha dams are the largest ever; Glines Canyon stands more than 200 feet tall. The dam removal is intended to allow salmon and steelhead to recolonize more than 70 miles of pristine habitat within Olympic National Park and restore the natural functioning of the ecosystem, from headwaters to the mouth of the river at the Strait of Juan de Fuca. Chinook are coming back to the Elwha in record low numbers this season, with fewer than 500 adults counted. Mike McHenry, fish-habitat manager for the Lower Elwha Klallam Tribe, sees a deadly combination of forces taking a toll — from the dams, which confine the fish to the lower five miles of the river and don't allow them to get to traditional spawning grounds, to state hatchery practices and bad flooding in 2006 that affected the number of fish coming back this year. "It's not good," said McHenry, who sees 2,000 chinook come back in a typical year. Scientists hope fish populations will rebound when the dams are out, with as many as 20,000 to 30,000 chinook returning each year. The fish are listed for protection under the Endangered Species Act. To start the dam-removal project, a 12-person crew this month started working 12-hour days with equipment barged to the south end of Lake Mills, about 16 miles upriver. They're clearing a 37-acre forest grown up on a delta of sediment behind Glines Canyon Dam, the uppermost of the dams. Soon, they will begin excavating a 1,100-foot-long, 50-foot-wide, 6-foot-deep channel in the middle of the delta, running north and south, toward the dam. The channel is important because it will help the sediment caught behind the dam flow evenly downriver. Modeling experiments have shown that without the channel, as much as 80 percent of the sediment could be left behind when the dam comes down.

One of the goals of the \$350 million dam-removal project is to end up with a natural-looking landscape. The channel will help limit the potential that hunks and pillars of sediment could be left behind as unstable ground that couldn't support vegetation. "The pilot channel is like a surgical tool, to just get things started in the right place," said Tim Randle in the Bureau of Reclamation's Denver office. "We thought that if we don't get it started in the right spot, you could have a lot of trouble later." An estimated 20 million cubic yards of sediment, or 1 million dump trucks' worth, is locked up behind the dams. That sediment, once rinsed downriver, is expected to replenish spawning gravel needed by fish in the river, as well as beaches and clam beds long since starved for material impounded by the dams, which have been in place for nearly 100 years. Dredging the material was ruled out because it would take an estimated 10 years of continuous truck traffic and cost too much, Randle said. Work on the pilot channel is expected to be finished by early October.

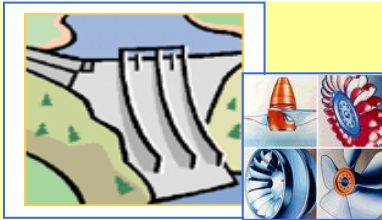
Crews are expected to begin taking the dams down next September, removing them gradually over more than two years.

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10/08/2010



# Some Dam – Hydro News and Other Stuff



**Quote of Note:** *“Make sure you are not irreplaceable: if you can’t be replaced, you can’t be promoted.”* --Anonymous

**“Good wine is a necessity of life.”** - -Thomas Jefferson

**Ron’s wine pick of the week:** Casa Silva Reserva, Colchagua Valley Chile, 2008

**“No nation was ever drunk when wine was cheap.”** - - Thomas Jefferson

## Other Stuff:

(You’re gonna say – it had to happen sooner or later, so now what? If Natural gas fired generation is used as backup, what does wind energy really cost?)

### **Oregon wind energy too much to handle**

djcoregon.com, September 27, 2010, BY: Nathalie Weinstein

When Northwest winds aren’t blowing, the energy grid compensates automatically by tapping into hydropower sources operated by the Bonneville Power Administration. But the federal agency says it is pushing the limits of how much backup power it can provide. The BPA is required by the state of Oregon to reserve 1,000 megawatts of hydropower to back up alternative energy sources that have variable power outputs. The agency provides backup hydropower to 3,000 megawatts of wind energy in the Northwest. The backup power is necessary to prevent utility customers from being left in the dark. But with more than two dozen new Oregon or Washington wind farms under construction or in the permitting stage, the BPA may soon be compromising the reliability of its hydropower facilities, said Doug Johnson, a spokesman for the agency. The BPA expects that by 2012 its capacity will fall short of the required reserve amount.

“The more wind that comes onto the grid, the harder it becomes to balance those resources with our hydropower,” Johnson said. “We’re required to provide balancing services when (the wind farms’) output isn’t consistent. And more developers are asking to have their resources connected each year.” One possible solution the BPA is looking into is called customer supplied generation, in which wind developers supply their own backup resources. Wind developer Iberdrola Renewables recently struck an agreement with the BPA to provide its own backup resources for its 1,100 megawatts of Northwest wind power.

Iberdrola will use power from a 600 megawatt natural-gas facility it owns near Klamath Falls as well as from out-of-state resources owned by energy company TransAlta and the Grant County Public Utility District. More states may be looking to customer supplied generation in the future.



according to Kevin Devlin, vice president of commercial operations for Iberdrola. The BPA's capacity to provide backup resources is smaller than the capacity of state agencies, he said. "Other balancing areas are much larger and can absorb more wind more easily," Devlin said. "Over time, this will become an issue everywhere, not just in the Northwest." While customer supplied generation seems like a simple answer to a complex problem, not many alternative energy developers have access to the backup resources that Iberdrola does, Devlin said. Iberdrola is the second largest wind power operator in the U.S.: It has a 24-hour energy trading floor, where it can buy backup power and sell its own power, as well as a national control center for monitoring all of its U.S. wind projects. Until more developers acquire similar resources, customer supplied generation will be limited. "Our company has a long history of procuring transmission as well as access to other electric capacity," Devlin said. "I don't think many other companies are in the same situation."

The BPA should be wary of striking too many of these independent arrangements in the first place, according to John Audley, deputy director of the Renewable Northwest Project. He said that too many parties managing the grid in a small geographic area could hurt its reliability. The BPA should continue to explore other ways that it can provide balancing resources without fragmenting operation of the Northwest's power grid, Audley said. "(The deal with Iberdrola) is a great project and we hope it's successful," Audley said. "But having one expansive system like BPA's is still the best way to go. We don't want to lose sight of that." The BPA is working with other utilities and wind project owners to develop better ways to predict winds. Contracting with third-party power suppliers also is being explored, but a pilot project to create criteria for such an arrangement is on hold.

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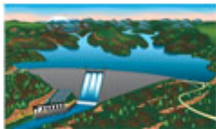
## Industry, Government Attention Turns to Energy Storage

SustainableBusiness.com, 09/30/2010

Utility-scale energy storage is beginning to receive more attention from venture capitalists and government funding sources, according to a *New York Times* special report. Pumped hydroelectric, air compression, flywheels and very large batteries are the primary technologies that are now critical to integrating renewable energy into the U.S. electric grid and smoothing the operations of emerging smart grid systems. Additionally, using stored power to meet peaks in electricity demand means less reliance on dirty, fossil-fuel power plants. Energy storage systems currently cost about \$1,000 per kilowatt-hour, according to Matt Rogers, a senior adviser to the U.S. energy secretary, Steven Chu. On Wednesday, California Governor Arnold Schwarzenegger signed a new law requiring state regulators to set targets for energy storage capacity in the state. The Federal Energy Regulatory Commission (FERC) is considering new regulations that would allow utilities to recover costs for energy storage systems. Read the full story at the link below.

[http://www.nytimes.com/2010/09/30/business/energy-environment/30iht-renstore.html?\\_r=2&src=busln](http://www.nytimes.com/2010/09/30/business/energy-environment/30iht-renstore.html?_r=2&src=busln)

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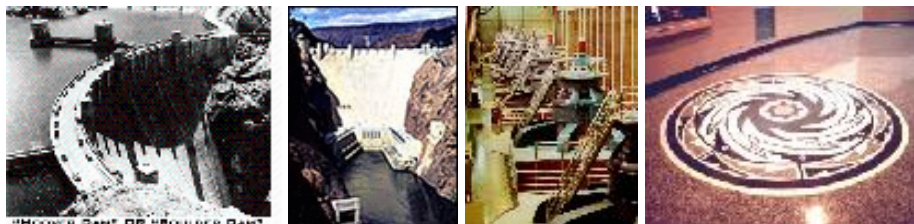


## Dams

(This article has a bunch of interesting links (click on blue heightened text))

### Engineering Education "Today in History" Blog: Hoover Dam

expertvoices.nsd.org, September 30th, 2010, written by: Agogino Alice



From our guest blogger: Kristen Constant at Iowa State: Today in History- **September 30, 1935** - [Dedication of Hoover Dam, Boulder City, Nevada](#). The concrete-arch dam, originally called Boulder Dam, supplied the first U.S. hydroelectric plant to produce over a million kilowatts. Hoover Dam serves Nevada and the Los Angeles area. Hoover Dam was built at the height of the Depression and provided thousands of jobs for

American workers. **To their credit, they completed the dam in less than five years - ahead of schedule and under budget.** Hoover Dam is a curved gravity dam with Lake Mead pushes one side and Black Canyon on the other, creating large compressive forces. It is reported that there is [enough concrete in Hoover Dam \(4.5 million cubic yards\) to build a two-lane road from Seattle, Washington, to Miami, Florida, or a four-foot-wide sidewalk around the Earth at the Equator.](#) The chemical heat produced by the curing concrete was dissipated by ice water circulating through more than 580 miles of steel pipes embedded in the dam. It is estimated that if the concrete had been allowed to cool naturally, it would *still* be warm to the touch!! See the Engineering Pathway's educational resources on [dam design and construction](#), or visit the [Civil Engineering Education](#), [Materials Engineering Education](#) or the [Electrical Engineering Education](#) community sites.

Also on this day in history in 1882, the [first U.S. hydroelectric plant](#) went online. [Rayon was patented in 1902](#) and the [first nuclear submarine](#) was commissioned in 1954.

(I guess the large flood event mention is that Probable Maximum Flood issue that affects many dams built 50+ years ago. Never liked the PMF answers because there is serious question on the need to update the main input to PMF determinations, i.e. the need to update Weather Service Probable Maximum Precipitation data.)

### **Bowman Dam Safety Fix Contract Awarded Bend Contactor Gets Nearly \$1 Million; Work Due Next Year**

From KTVZ.COM News Sources, September 27, 2010

PRINEVILLE, Ore. -- The Bureau of Reclamation has awarded a \$938,742 construction contract to correct safety deficiencies at Arthur R. Bowman Dam, located on the Crooked River about 20 miles southeast of Prineville. The contract was awarded to Kirby Nagelhout of Bend last Wednesday. **"The modifications will correct a hydrologic deficiency that was identified under Reclamation's Safety of Dams Program which determined that during a large flood event Bowman Dam would be overtopped and could potentially lead to dam failure,"** said Larry Wolf, the federal agency's Safety of Dams Program Manager.



**The modifications include adding a 6-foot high concrete parapet wall to the upstream crest of the dam and raising a portion of the spillway walls by 2-feet.** The contractor is expected to start in May 2011, with a completion date of November 2011. Roadway traffic will be limited to one lane across the crest of the dam throughout much of the construction, with temporary road closure starting the first week of October. Reclamation is advising the public to obey traffic signs and exercise caution in the area due to the movement of heavy equipment. The Powder House Cove boat ramp will not be affected by construction activities. The Big Bend Campground will be open; however, a portion of the park will be used to locate construction equipment. The Modification Report for Bowman Dam was approved by the Office of Management and Budget in early August 2010 and sent on to Congress where a mandatory 30-day waiting period expired this month clearing the way for the contract award.

Arthur R. Bowman Dam was constructed by Reclamation from 1958-1961. The dam impounds Prineville Reservoir which has an active capacity of 152,800 acre-feet. The facility is part of the Crooked River Project that serves multiple purposes such as irrigation storage, flood control, fish and wildlife enhancement, and recreation. The Ochoco Irrigation District operates and maintains the dam under federal contract with Reclamation.

### **Magalia dam, inside and out**

By Paul Wellersdick Staff Writer, 09/23/2010, paradisepost.com

Steady drips of water eerily trickle from inside a gated entrance to a 200-foot-deep tunnel in the bowels of Magalia Dam, **one its owner says is of the worst seismically prepared dams in the state.** On the rounds of the 151 dams in northeast California, Area Engineer Bill Pennington of the State Department of Water Resources Division of Safety of Dams said it isn't often reservoirs are required to keep their elevations deflated as Magalia Reservoir's is. **Since 1996, dam safety has required the lake to be drawn down to 2,200 feet above sea level, 25.8 feet below the dam's designed capacity and spillway. "It's a dam that if we didn't restrict, during a significant earthquake we could have a problem."** Pennington said. "With the lower water surface it's safe. When we pulled it down it wasn't a popular thing to do." The dam was built in the early

1900s and is in need of some retrofitting or replacement and PID is still looking for funding streams to that end. As such the dam is monitored closely for problems and maintenance projects. Each year consultants working for the Paradise Irrigation District, state officials and district employees comb the dam jotting notes, taking measurements and inspecting its faces, walls and pipes. "This outfit is real good about having independent consultants," Pennington said. "Many don't have the wherewithal to do that."

PID keeps an even closer eye on the structure that towers over the district's treatment plant immediately downstream. Operators at the plant pay particular attention to the dam's leaking, which all sides of Tuesday's inspection said were normal. Nicholas Josten Senior Engineer for Genterra Consulting Inc., PID's dam consultant said all dams leak and are even designed to, for it is impossible to build one impervious to water infiltration. The more water behind the dam the more it may leak. A small creek was running through the dam Tuesday, as normal, when the reservoir was within inches of its maximum allowed height. Other factors including ground water levels, rainfall, runoff and others affect flow through the dam. Flow is measured behind Magalia Dam through a series of primitive weirs allowing water to be calculated as it flows through the miniature dams, some just a couple feet across. Also many test wells, or piezometers, perforate the dam allowing operators to track ground water levels inside the dam. Also, PID periodically survey's the dam's movements after earthquakes and other changes. PID Engineer Neil Essila said the largest movement was in the '70s when Skyway was rerouted on the crest of the dam, causing the dam to sink about a foot. With more than 1,250 dams in California, 450 in Northern California alone and 60 employees, the dam safety division keeps busy. Pennington gave some advice about monitoring and slowing erosion, complimented the district on its use of inmate crews to clean vegetation and scheduled a follow up before repeating the process at Paradise Lake.

(Earthquakes in Nebraska – Hmmm! Not much of a shaker though.)

### **NRD orders inspections for dams near Neb. Quake**

Associated Press - October 2, 2010

LEXINGTON, Neb. (AP) - Inspections have been ordered for seven dams located near the epicenter of an earthquake that rattled four central Nebraska counties. KHGI-TV reports that officials with the Central Platte Natural Resources District are worried that last Sunday's quake may have damaged seven dams between Cozad and Lexington. The U.S. Geological Survey has said the quake had a magnitude of 3.0, with the epicenter 6 miles southwest of Oconto in southern Custer County. It also could be felt in Dawson, Gosper and Lincoln counties. The NRD's general manager, Ron Bishop, says heavy rains earlier this year washed out some of the earthen dams, so there's concern about earthquake damage. Information from: KHGI-TV, <http://www.nebraska.tv>



### **Hydro**

(The stuff you find on the internet never ceases to amaze:

<http://sustainability.highstocks.org/21st-century-complete-guide-to-hydropower-hydroelectric-power-dams-turbine-safety-environmental-impact-microhydropower-impoundment-pumped-storage-diversion-run-of-river/>)

### **21st Century Complete Guide to Hydropower, Hydroelectric Power, Dams, Turbine, Safety, Environmental Impact, Micro-hydropower, Impoundment, Pumped Storage, Diversion, Run-of-River**

#### **Product Description**

This unique electronic book on CD-ROM has a collection of federal documents and resources about hydropower, hydroelectric power, and related technologies such as dams, turbines, and micro-hydropower. Research and development activities of the Department of Energy are covered, with information on technology development, projects, history, safety, and environmental impact. There is also material from the Federal Energy Regulatory Commission (FERC) regarding licensing, compliance, safety and inspections of hydropower and the hydropower industry. Coverage includes water energy resources, state assessment reports, and more.

The hydrologic cycle provides the basis for hydropower –water constantly moves through a vast global cycle, in which it evaporates from lakes and oceans, forms clouds, precipitates as rain or snow, then flows back to the ocean. The energy of this water cycle, which is driven by the sun, is tapped most efficiently with hydropower. Diversion projects channel a portion of the river through a canal or a penstock and may require a dam. Impoundment hydropower uses a dam to store water. Water may be released either to meet changing electricity needs or to maintain a constant reservoir level. Pumped storage pumps water from a lower reservoir to an upper reservoir at times when demand for electricity is low. During periods of high electrical demand, the water is released back to the lower reservoir to generate electricity. Run-of-river projects utilize the flow of water within the natural range of the river, requiring little or no impoundment. Run-of-river plants can be designed using large flow rates with low head or small flow rates with high head. Micro-hydropower projects—produce 100 kilowatts (kW) or less. Micro-hydro plants can utilize low heads or high heads. Current hydropower technology, while essentially emission-free, can have undesirable environmental effects, such as fish injury and mortality from passage through turbines, as well as detrimental changes in the quality (dissolved gases) of downstream water. Advanced hydropower turbine technology could minimize the adverse effects yet preserve the ability to generate electricity from an important renewable resource. The goal of the U.S. Department of Energy's (DOE's) Advanced Hydropower Turbine System Program is to develop technology that will allow the nation to maximize the use of its hydropower resources while minimizing adverse environmental effects. Conceptual designs of environmentally friendly hydropower turbines have been completed under the DOE-industry program.

(Anyone interested in a hydro project – here's one that needs some help)

### **Editorial: Hydropower and fish**

projo.com, Providence Journal, September 29, 2010

The Rhode Island Department of Environmental Management recently acquired the dam on the Blackstone River at the Elizabeth Webbing Mills, in Central Falls, to expedite the passage of anadromous fish to potential spawning areas up the river. The DEM hopes that fish ladders being built at the Pawtucket Falls and at three dams in Pawtucket and Central Falls will let the Blackstone have an annual herring run, or eventually even a population of Atlantic salmon, by opening up some 25,000 acres of river to these spawning fish. These and other anadromous species of fish spend most of their lives at sea but spawn in the fresh water of rivers.

The dam has a small hydropower plant to generate electricity. The 745-kilowatt turbine has been inoperative for the last half-dozen or so years, and the Federal Energy Regulatory Commission wants to pull its license, but that would be a real waste. So DEM Director Michael Sullivan hopes that a private operator can step in to save this great source of renewable energy. A candidate would have to be prepared to make repairs to the hydropower plant, with its headrace, powerhouse, turbine, generator, 70-foot transmission line and tailrace, and other appurtenances, as well as about \$500,000 worth of work on the 10-foot-high, granite dam. But think of it — at the end of the day, the operator would have a guaranteed income as long as the river continues to run. And Central Falls and environs would have an additional supply of energy without any carbon footprint. If someone doesn't come forward, the DEM will route the fish ladder through the hydropower plant, which will create an interesting display for schoolchildren. If an operator can be found, it would put the ladder elsewhere over the dam. We applaud the impulse to make the Blackstone a habitat for anadromous fish, though, unlike many of the region's rivers, the Blackstone by all accounts was never one in the past: The 40-foot-high Pawtucket Falls presented too great an obstacle to their swimming upstream. However great a symbolic victory the presence of such species would be in this once dreadfully polluted river, renewable-energy sources, such as the hydropower plant, are also valuable. This is not an either/or proposition. We can have both.

(This is one to watch because it goes counter to what we have been seeing – namely, the push for run-of-river flows that have reduced hydro generation nation-wide.)

### **Dams may return to reservoir storage**

Associated Press - September 29, kivitv.com

TWIN FALLS, Idaho (AP) - Idaho Power officials are asking regulators to allow them to adjust the flows at two Snake River dams to follow energy demand. For the past six years, the rate at which the utility's dam turbines turned depended mainly on the flow of the river. But now the hydropower company wants to be able to adjust the flow at the Bliss and Lower Salmon Falls dams, a process called load-following. The Times-News reports that the two dams were required to use run-of-the-river flows after their license came up for renewal with the Federal Energy Regulatory Commission in 1995. In the past, some conservation groups

have opposed load-following because they believed it could negatively affect some endangered species.

The federal commission is taking public comment on the proposal until Oct. 13.

## Hydrovolts Finalist in Bend Venture Conference

seattlepi.com, September 29, 2010, Thea Chard, XCONOMY

Seattle-based hydropower turbine developer Hydrovolts has been selected as one of five finalists up for \$175,000 in venture funding at the 7th annual Bend Venture Conference. The company, founded in 2007, will pitch its concept and business idea in a shark-tank style competition at the conference on October 15. Earlier this month Hydrovolts scored a \$250,000 development deal with civil engineering firm DLZ Corp. that could turn into a \$20 million contract. The company is also one of 14 semifinalists in the Pacific Northwest region of the Cleantech Open. The region will announce three finalists to move up to the national competition on Monday.

(Oh oh, what did these people do to get everyone mad?)

## Sullivan County supports request to deny owners of hydro projects from selling them

midhudsonnews.com, 9/30/10

MONTICELLO – Sullivan County government has gone on record in support of a request by Congressman Maurice Hinchey and Senator Charles Schumer to ask the Federal Energy Regulatory Commission to deny a transfer of license by AER, NY-Gen LLC for the Swinging Bridge, Mongaup Falls and Rio hydroelectric power projects. County Legislature Chairman Jonathan Rouis said the hydroelectric system has been in non-compliance with its FERC license “for far too long.” He said AER has failed to address main issues required by the FERC license and has not conducted “good faith discussions” with the community and stakeholders. County Legislator David Sager said FERC should not approve any transfer requests until AER brings themselves into compliance with the terms of their license.

(It's no surprise a pumped storage project is more scenic in Italy and the wine and food are the best! – click on the two links below. This has some sentimental value since the location is a little west of my Father's village – Fonzaso.)

## Ponale Hydroelectric Power Plant

[http://en.wikipedia.org/wiki/Ponale\\_Hydroelectric\\_Power\\_Plant](http://en.wikipedia.org/wiki/Ponale_Hydroelectric_Power_Plant)

(Scroll thru photos)

<http://www.panoramio.com/photo/23867720>

(Italian: Centrale idroelettrica del Ponale) is a pumped storage plant, located in city of Riva del Garda in the Italian province of Trento, on River Ponale between Lake Ledro and Lake Garda<sup>[1]</sup>. The station was built in 1928-1929<sup>[2]</sup> and underwent overhaul in 1998. The station is known by the world record in high-rise concrete pumping during the reconstruction in 1994. The achieved record was 532m<sup>[3]</sup>. During construction of the plant, there was discovered the remains of a Bronze Age pile-dwelling village (over 10 000 piles) on the east of the Lake Ledro<sup>[4]</sup>.



(Then, there's pumped storage in the U.S. where we can't seem to get one going. This one sounds like a bad dog fight!)

## LAKE ELSINORE: Water district at odds with hydroelectric plant developer

Elsinore Valley wants to take lead on transmission line study

By MICHAEL J. WILLIAMS - North County Times - Californian | September 30, 2010, nctimes.com

The proponents of a hydroelectric plant proposed west of Lake Elsinore are engaged in a dispute over who should be responsible for environmental studies on the power lines needed to distribute electricity from the plant. The Elsinore Valley Municipal Water District contends it should take the lead on the environmental work because the 500-kilovolt power lines are an intrinsic part of the hydroelectric project, officially called the Lake Elsinore Advanced Pumped Storage Project. The district signed an agreement in 1997 with a private firm, Nevada Hydro Co., to develop the project, which has been wending its way through regulatory agencies in fits and starts down through the years. Nevada Hydro recently put in a separate application to the state Public Utilities Commission for the transmission aspect, called the Talega-Escondido/Valley-Serrano 500-kV Interconnect Project. The application maintains the interconnect project ought to be considered separately because, even if the Lake Elsinore plant weren't built, the transmission lines would provide a high-power conduit between San Diego County and the state power grid via connections in Riverside County. "The fact is they have to be licensed separately," said Nevada Hydro representative David Kates on Thursday of the transmission lines and power plant. "They're going to be owned by different companies and the revenues (to build them) are going to come from different sources."

Plans for the hydroelectric plant, which is estimated to cost \$1 billion, call for an underground pumping station to propel water uphill southwest of the lake at night and store it in a large reservoir behind a 180-foot-high dam in the Cleveland National Forest. During the daytime, the water would be released to flow back down the hill, powering turbines and generating electricity when demand is higher. Water district officials say the project will enable the district to keep lake levels stable, ensuring good water quality. The plant would hook up with the proposed 32-mile power line stretching through the Cleveland National Forest between a substation north of Lake Elsinore and a substation that would be built in an existing power line easement bordering Camp Pendleton. The Public Utilities Commission typically does the research required on power line projects to ensure compliance with the California Environmental Quality Act. But the water district protested, saying it should be the lead environmental agency or at least co-lead agency because the transmission lines have always been proposed as an aspect of the power plant project. "One of the biggest fears that the district has is that it will turn into a lines-only project, said district board member Phil Williams on Thursday. "That is not what the water district has ever envisioned and the lines-only project is not something (district representatives) even want to talk about. As far as the district is concerned, the project is a pumped storage project from start to finish." The district in a letter from General Manager Ron Young outlined its case to the Governor's Office of Planning and Research, which is the agency in charge of resolving the dispute. A ruling should be issued in the next few weeks, those observing the situation say. Williams said the water district should be involved in the environmental work because of the implications of the transmission-line siting for the power plant. "The district doesn't feel comfortable with folks up in Sacramento and in San Francisco making decisions about things that have a huge effect on this area," he said. Kates said company officials are working on a written response to the water district's position for submittal to the Office of Planning and Research. "We believe that the Public Utilities Commission is the appropriate agency to do the work," he said. "They're way more qualified. They have a huge task ahead of them to site the transmission line and, frankly, I don't know what actions the water district has taken that would allow them to be the lead agency."

Both the transmission lines and the plant have run into stiff opposition from Lake Elsinore area residents and environmental groups. Gene Frick, co-chairman of the Santa Ana Mountains Task Force and a board member of the Friends of the Forest, Trabuco District, recently went before the commission in San Francisco to represent those organizations on the power line project. "Our main position is that we don't want either the pumped storage project or the transmission line," he said. "We think that neither one is necessary. I believe the pumped storage project may not be able to raise money (to support itself). There hasn't been one built for 20 years." The power lines would result in the destruction of part of the national forest habitat and exacerbate the risk of wildfires, he said. Despite the ongoing bureaucratic obstacles and the opposition, Kates said he is confident both the transmission lines and hydroelectric plant will be built. "We're looking forward to employing a lot of local people to build both projects," he said. "We have an obligation to everyone in that area ... to get this done and we're going to do it."

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(There is a reason to smile sometimes when it rains – it's called kWh's)

## Rains drive Xcel Energy dams' surge in energy production

Source: Leader-Telegram by Chris Vetter, The Leader-Telegram, Eau Claire, Wis., istockanalyst.com

Oct. 01--Heavy rains this summer have meant Xcel Energy dams across western Wisconsin have been getting quite a workout. The 20 dams in Xcel's system -- including six on the Chippewa River, stretching from Holcombe to Eau Claire -- produced 524,000 megawatts of energy from January through August, up 2 percent from a year ago at the same time. August energy production alone was a record-setting 111,000

megawatts, said Rob Olson, superintendent of hydro operations. "I expect September will come back with some high numbers as well," Olson said. "And with all the water left in the system, we expect higher totals in October through December. The watershed is just saturated." However, all of that energy may not mean big savings on residents' utility bills.

Xcel Energy spokeswoman Liz Wolf Green said energy production at dams is one of many ways the company generates energy, and an increase in water energy may not have an effect on utility bills. While the 2 percent increase from last year isn't much, Olson pointed out that energy production was minimal during the first half of the year. From January through May, energy production was down because there wasn't much water in the system. That has changed with the heavy rains throughout this summer. In fact, heavy rains have generated so much river water that much of it has flowed through open gates instead of energy-producing turbine systems. "We're actually passing water downstream without turning it into energy," Olson said. In Eau Claire, about 55,000 cubic feet of water passes through the dam each second. However, only about 7,500 cubic feet per second is needed to spin the turbines that produce energy. That energy is instantly spread out across Xcel's grid; it isn't stored on site at any of the dams, he explained. Employees have been working extra hours because of the high water levels, Olson said. "One thing we have to be on top of is to make sure all our generating units are online," he said. "There were operators being called out all weekend to make sure we were on top of it, and stay ahead of the water." Among those jobs is pulling debris that is coming into the dams. Trash racks catch most of the debris. "The river banks get scoured when you are flooded," he said. "We have to deal with that at each plant on the river." Boat-warning barriers upstream from the dams in Eau Claire and Jim Falls were knocked out of commission because of the heavy water supply going through the dams. The barriers won't be replaced until it is safe for workers to go out and replace them, he added. Olson said he recently watched a large tree get caught in the current and pick up speed as it closed in on the dam before shooting off down the river in the strong current. "The power of that water is incredible," he said. "People really need to use common sense when being around dams, both upstream and downstream." Vetter can be reached at 715-723-0303 or [chris.vetter@ecpc.com](mailto:chris.vetter@ecpc.com).

Dam Sites - Xcel Energy operates the hydroelectric dams at these sites along the Chippewa River: Holcombe, Cornell, Jim Falls, Lake Wissota, Chippewa Falls and Dells Pond in Eau Claire. - The state is requesting the Federal Emergency Management Agency conduct a preliminary damage assessment next week in Buffalo, Clark and Trempealeau counties for damages to public infrastructure.

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## What's Going Up

### Juniper Ridge Hydroelectric Project wrapping up north of Bend

October 02, 2010, bendbulletin.com — Tim Doran, The Bulletin

- What: Juniper Ridge Hydroelectric Project
- Where: The Pilot Butte Canal, on the east side of U.S. Highway 97, north of Bend
- Owner: Central Oregon Irrigation District
- General contractor: Slayden Construction Group, Stayton
- Primary consultant: Black Rock Consulting Inc., Tumalo
- Design: Sunrise Engineering, Fillmore, Utah - Contact: 541-548-6047

#### Details:

With construction essentially complete, workers at the Juniper Ridge Hydroelectric Project north of Bend have started testing the system and generating electricity, said Steve Johnson, district manager of the Central Oregon Irrigation District, which owns the dam. Travelers on U.S. Highway 97 can see the powerhouse, located about a mile south of Deschutes Market Road on the east side of the highway, but the \$24 million project also includes 2.5 miles of piped irrigation canal, Johnson said. Canal piping began in October 2009, at the end of the irrigation season, and was completed when the new season began in April. The district will only generate electricity during irrigation season or other times when the water, initially diverted from the Deschutes River, normally flows in the Pilot Butte Canal. To generate electricity, the water turns a turbine in the powerhouse, Johnson said. It's expected to produce about 3.5 megawatts per hour, or roughly enough to power about 1,300 homes. "Every kilowatt-hour produced, that's all going to PacifiCorp," he said, referring to Pacific Power's parent company. "It's all being sold to them." Money generated by selling the electricity will first be used to pay for the project, Johnson said, and any remaining will help pay district operations and maintenance expenses, keeping a lid on assessments the district's members must pay. Along with generating renewable energy, the Juniper Ridge Hydroelectric Project will conserve water. Piping the canal reduces the amount of water lost when it seeps into the porous ground, Johnson said. The district estimates piping saves about 20 cubic feet per second per day during the season.

(For what it's worth! I do like the arch dam photo. Anyone know the name of this dam?)

## Hydropower making waves in the renewable energy world

Here is a look at some of the latest trends and top companies in the world of hydropower, a dominant renewable energy resource

Andrea Marino | Wed Sep 29, 2010, energydigital.com

Hydroelectricity, generated through hydropower, is the oldest, most popular method of producing renewable energy. According to the U.S. Energy Information Administration (EIA), "Water is currently the leading renewable energy source used by electric utilities to generate electric power."



### Hydroelectricity Locations

Several countries utilize hydroelectric power for a majority of their electric energy generation, such as Venezuela, Switzerland, Norway, Canada and Brazil. In 2009, China generated the highest net amount of hydroelectric power in the world, with Brazil, Canada and the U.S. following closely. According to the EIA, "Total generation from renewable resources increases by three percent annually." The renewable share of world electricity generation is expected to grow a total of 23 percent between 2007 and 2035, with around 80 percent of the increase coming from hydroelectric power and wind power.

### Hydropower Pros and Cons

The advantages of producing electricity via water include: zero greenhouse gas emissions and therefore zero pollution to the environment; consistent electricity production for many decades; repurposing for irrigation or recreational activities in the lakes; and the ability to stop production and use dams only when needed. Hydroelectricity is the only renewable energy that is capable of competing economically with fossil fuels. EIA believes, "Government policies or incentives often provide the primary economic motivation for construction of renewable generation facilities." Hydropower generation also presents a few disadvantages, such as: high costs for building dams; damage to natural environments from flooding over large areas of land; and potential geological damages.

### Major Hydropower Projects

#### Itaipu Binacional

Itaipu Binacional is a project developed collaboratively by Brazil and Paraguay, which includes the Itaipu Dam, its hydroelectric power plant and the Itaipu Lake. The plant was built on the Paraná River, situated on the Brazil-Paraguay border. Construction of the Itaipu Dam was completed in 1982, and the power plant has been in operation since 1984. Itaipu Binacional is the world's largest generator of clean, renewable energy. The total installed power capacity of the project is 14,000 megawatts from 20 generating units, supplying around 19 percent of the energy consumed in Brazil and 77 percent of the demand in Paraguay. According to Itaipu Binacional, "In 2009, the Itaipu power plant generated 91.651.808 megawatts per hour (MWh), the fourth highest in 25 years of power production."

#### China Yangtze Power Co Ltd.

China Yangtze Power Co Ltd. is the largest hydropower corporation in China. The company owns and operates the Gezhouba Power Plant, which has a total installed capacity of 6,977 megawatts. Additionally, China Yangtze Power Co is responsible for managing six generating sets at the Three Gorges Power Plant, currently in operation. The total operational and management capacity of the company is 12,577 megawatts. Electricity generated by the hydro plants is sold to central China and the Guangdong Province. According to China Yangtze Power Co, "Depending on the construction of the Three Gorges Project and the development of the water resources at the upper reaches of the Yangtze River, the company will continue to commit itself to generating the hydropower-dominated clean electricity."

#### Companhia Energética de São Paulo

Companhia Energética de São Paulo (CESP), the largest power generation company in São Paulo state and the third largest in Brazil, has six hydroelectric plants, and 57 generating units. The company's total installed capacity is 7,445 megawatts, with 3,916 megawatts of assured power. Electrical generation from these plants accounts for up to ten percent of the national total. The company's hydro plants distribute via

two drainage basins, including the Paraná River basin, located in the western part of São Paulo state, and the Paraíba do Sul river basin, located in the east.

#### **The Guri Dam**

Located on the Caroní River in Bolívar State of Venezuela, the Guri Dam is considered one of the largest in the world. Also known as the Central Hidroeléctrica Simón Bolívar, the dam was developed in two parts, with construction concluded in 1986. The dam construction has been controversial, due to the destroyed environment resulting from the created lake. The Guri hydroelectric power station is situated in the Necuima Canyon, near the Caroní River's mouth. As of 2009, the plant is the world's third largest, with a generating capacity of 10,200 megawatts.

#### **Grand Coulee Dam**

According to the U.S. Department of the Interior, Bureau of Reclamation, "Grand Coulee Dam is the largest hydropower producer in the United States, with a total generating capacity of 6,809 megawatts. It is one of the top ten largest producers of electricity in the world." The dam is located on the Columbia River in Washington State. The reservoir is named Franklin Delano Roosevelt Lake, after the U.S. president who oversaw the development of the dam. MWAK constructed the dam's foundation.



### Water

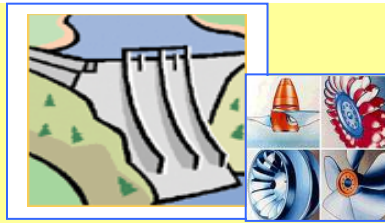
#### **Officials: Flooding Not Caused By NY, NJ Dams**

Stephanie Esposito | Reporter, October 1, 2010, wfmz.com

The Delaware River is expected to crest tomorrow, even though the rain stopped this morning. That has some people living near the river a little skeptical. For years there have been accusations that flooding on the Delaware is caused by dams in New York and North Jersey releasing their water after large storms. But this, time officials say if it does flood tomorrow that's not the case. Prior to this week's rains the basins have been experiencing really dry conditions, said Kate O'Hare with the Delaware River Basin Commission. Last week the Delaware River Basin Commission issued a lower basin drought warning. That's why the Delaware River Basin Commission says any flooding that may happen tomorrow has nothing to do with dams. For some people whose lives are invested on the river they aren't buying it. Authorities say this one, if it happens, is entirely the work of Mother Nature. There're gonna blame it on the creeks coming in, yada yada, said one woman who lives near the river. But they are dumping. When they dump it raises the river. Heavy runoff from those storms has caused rivers, creeks tributaries and streams to rise, said O'Hare. They say water is released from all dams on a regular basis and this is nothing different. There were no significant large releases made from the NYC Delaware Basin reservoirs in advance of this storm except to make the flow objectives at Monogahue, N.J., said O'Hare. But those who at one point lost everything say even that is too much right now. If it does come up I've got a problem, said another person who lives near the river. If they do they should just take one at a time, said Phillipsburg resident Memma Derringer. The Delaware is supposed to crest around 1:00 tomorrow afternoon.

<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.

10/15/2010



# Some Dam – Hydro News and Other Stuff



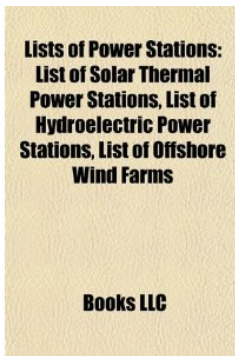
**Quote of Note:** "The budget should be balanced, the Treasury should be refilled, public debt should be reduced, the arrogance of officialdom should be tempered and controlled, and the assistance to foreign lands should be curtailed lest Rome become bankrupt. People must again learn to work, instead of living on public assistance." - Cicero - 55 BC

**"Good wine is a necessity of life." - Thomas Jefferson**

**Ron's wine pick of the week:** Acre Chardonnay, 2007, CA

**"No nation was ever drunk when wine was cheap." - Thomas Jefferson**

## Other Stuff



**Lists of Power Stations: List of Solar Thermal Power Stations, List of Hydroelectric Power Stations, List of Offshore Wind Farms [Paperback]**



## Dams

(Interesting – sometimes a dam is a good thing for a fish!)

### Dams are rebuilt near canyon's rim

deseretnews.com, Sept. 29, 2010

FREDONIA, Ariz. — **Volunteers have restored nearly 30 hand-built log dams to improve trout habitat on a stream on the North Rim of the Grand Canyon.** The summer-long project to rebuild dams along North

Canyon Creek on the Kaibab Plateau was led by officials from the Arizona Game and Fish Department. The crews had to hike in and only use hand tools because the area is a designated wilderness where engines are banned. North Canyon Creek is the only stream that runs year-round on the plateau. Crews built 68 log dams in 1934 under a Depression-era jobs program to help make the stream suitable for trout. A genetically pure population of rare Apache trout has now been planted in North Canyon Creek to prevent it from becoming hybridized.

(Not your large dam, but nevertheless an important one)

## New Kentucky River dam is finished

By Andy Mead - kentucky.com, Oct. 05, 2010

For the first time in more than a century, a new dam spans the Kentucky River at Valley View. The dam is important because it holds the pool from which Lexington gets most of its water. Three years of seasonal construction ended Monday, said Daniel Gilbert of Stantec Consulting Services. Stantec designed the dam and has inspected the work; Gilbert is the project's resident engineer. The new Dam 9 consists of eight concrete-filled steel cylinders, each 52 feet in diameter. It sits in front of the old Lock and Dam 9, which was completed in 1903 and consists in part of timbers covered with concrete. The old dam had been renovated several times, but it was considered too old for long-term water supply needs. Under normal conditions, water pours over a portion of the new dam, just as it did the old dam. There is no lock in the new dam to allow boats to pass. But it is designed with a cylinder directly in front of the old lock. The idea is that that cylinder could be removed in the unlikely event that there would be funding for a lock. The new dam was built by C.J. Mahan, a company from near Columbus, Ohio. Final cost, according to the Kentucky River Authority: \$14,933,136.98. Dam 9 originally was to be completed last year. Several factors, including high water periods, caused delays, Gilbert said.

In 2008, fees the river authority levies on those who withdraw water from the river were raised to pay for Dam 9. Water utilities pass the costs to their customers. The increase ended up costing the average residential customer about 30 cents a month. The river authority also is replacing Lock and Dam 3, north of Frankfort in Owen County, which holds another pool that contributes to Lexington's water supply. Construction is nearly half finished. Kentucky American Water has a withdrawal pipe in the pool behind Dam 9 and recently completed a new plant that draws from the pool behind Dam 3. Next up is engineering work on Dam 8, which holds the water supply for Nicholasville, said Stephen Reeder, the river authority's executive director. The 14 dams of the Kentucky River navigation system were built between 1836 and 1917. Their primary purpose was to bring coal out of Eastern Kentucky. By the time the last dam was completed near Beattyville in Lee County, the railroads had reached the region, and little coal ever moved on the river. Most of the locks now don't work, inhibiting pleasure boating on the river, but the dams are important for water supply.

(This is an ominous warning regarding all dams of this type – the U.S. owners of such dams need to be vigilant. That is the ugliest stuff I've ever seen.)

## Dam break spills toxic sludge in Hungary

Four people killed in toxic spill in Hungary

abc2news.com, 10/06/2010

The government of Hungary says it could take one year to clean up the toxic sludge following a dam break at a chemical plant. Four people were killed and hundreds evacuated after the incident. The spill swamped several villages over an area of 16 square miles. A state of emergency has been declared and officials are calling the spill "an ecological disaster." Hungary's Environmental Minister says they are working "desperately" to prevent the sludge from contaminating the Danube River, one of Europe's main waterways.



## Hungary races to build dam amid new sludge threat

By GERGELY SZAKACS, REUTERS, winniegsun.com, October 10, 2010

BUDAPEST, Hungary - Workers raced to build an emergency dam in western Hungary on Sunday as cracks in a reservoir widened, threatening to unleash a second torrent of toxic sludge on the village of Kolontar and nearby rivers. About one million cubic metres of the waste material leaked out of the alumina plant reservoir into villages and waterways earlier this week, killing seven people, injuring 123 and fouling rivers including a local branch of the Danube. Kolontar was evacuated on Saturday after cracks appeared in the northern wall of the reservoir, threatening a second spill of the toxic red sludge, which swept through neighbouring areas on Monday, toppling cars and wreaking havoc in houses. A by-product of alumina production, the thick, highly alkaline substance has a caustic effect on the skin. It contains heavy metals, such as lead, and is slightly radioactive. Inhaling its dust can cause lung cancer. News agency MTI cited environment state secretary Zoltan Illes as saying a 25-metre-long crack in the weakened wall had widened slightly by Sunday morning and the wall of the damaged reservoir now looked beyond repair. Illes said the northern wall of the reservoir could collapse "within one day or a week" and crews at the scene were scrambling to complete a new dam to protect Kolontar and the nearby town of Devecser, home to 5,400 people. Gyorgyi Tottos, a spokeswoman for disaster crews on the scene told Reuters authorities hoped to complete the 600-metre long and 5-7-metre tall dam within days to stop 500,000 cubic metres of sludge still in the reservoir from escaping.



### RACE AGAINST TIME

"This wall will be able to stop the flow, experts hope to get it done within three days," Tottos said. "This is a race against time as good weather is forecast for the coming few days but then the rain will come. If we can have the dam finished by the time the rain comes, then it will be all right," she said. Tottos added that the sludge still in the reservoir was thicker than the water-like substance which caused Monday's disaster and authorities expected its spread to be slower and more contained, should a new spill occur. While Monday's spill affected 1,017 hectares, she said the remaining sludge could spread out over an area of 500 to 1,000 metres from its origin. Tibor Dobson, spokesman of disaster crews at the scene, said earlier that workers had laid the foundation of the new dam in Kolontar by Sunday morning. Dobson said the number of people evacuated from Kolontar, which lies closest to the reservoir, had increased to about 1,000 overnight. Prime Minister Viktor Orban has described the torrent of sludge as the worst ecological catastrophe Hungary has suffered. The nearby town of Devecser remained on alert. The military has sent 319 soldiers and 127 transport vehicles into the town and five trains are ready in case it has to be evacuated. Dobson said 400-500 people had decided to leave the town voluntarily and at this stage an evacuation was unlikely. Orban will inform parliament about the findings of an investigation on Monday and promised the "the toughest possible consequences" "to ensure such a disaster does not recur. The interior ministry said on its website that samples taken early on Sunday showed that alkalinity levels in smaller rivers affected by Monday's spill, and in the Danube, had returned to normal.

### Spillway gates concerns reduce Ore. dam storage

columbian.com, October 5, 2010

SALEM, Ore. (AP) -- Concerns about spillway gates atop 11 Willamette Valley dams has prompted the U.S. Army Corps of Engineers to reduce water storage until the gates are repaired or replaced. The Statesman Journal reports the loss of storage capacity means the dams will be releasing more water during a longer period of time this winter and spring as a flood-control strategy. Collectively, the entire network of dams holds back about one-fourth of the runoff each year in the Willamette River Basin. The Army says the project is estimated to cost about \$150 million and will take years.

### Commentary: Those dams have saved us

By Hasso Hering, Albany Democrat-Herald, democratherald.com | October 3, 2010

Last week's announcement of a little less flood protection in the Willamette Valley over the next several winters, while repairs are made at 11 dams, is a timely reminder of how much protection the dams in the Willamette Project dams have provided so far. The repairs are to upgrade spillway gates that were built to the standards of their day but, the Corps has discovered, may buckle under certain adverse conditions. The Corps cites an estimate of \$20 billion in damage prevented since the dams were built. That's for flood losses alone. But consider also all the other benefits the dams have provided since the first were completed in the 1940s. There is power, for one — an estimated \$80 million worth of electricity generated per year

without smokestack emissions and without having to keep adding fuel that first has to be mined. There is recreation — the uncounted hours and days that Oregon residents and visitors have enjoyed being on the lakes behind those dams. If you want a value, how does \$100 million a year sound? Also there is the fact that in September and October, before the rains start, the Willamette River is still flowing in a fairly copious way. Without the stored water released from behind the dams, the river by this time of year would be a mere trickle, far less able to cope with — by further diluting — the treated wastewater that comes from the cities and scattered industries along its path. The downside, if there is one, is that a good chunk of habitat of migratory fish has been blocked, a loss for which hatcheries try to make up. A couple of wild fish runs, winter steelhead and spring chinook, have been listed as threatened for several years now.

Work is under way to try to help the fish runs in various ways, but nobody has yet mentioned the possibility of removing one or more of the 13 dams in the project. Removing the dams would be a tragedy because they continue to be a blessing for the Willamette Valley and everybody who lives here. The number who live in the valley is likely to grow, and as it grows, the importance of the dams can only increase. In the 1980s, after the idea of building dams became anathema to lots of people, and in the face of local opposition, Congress was persuaded to de-authorize two additional dams in Linn County that had been part of the original plan. Their demise was made easier by calculations that showed their costs would outweigh their benefits, though it always seemed as though the cost-benefit analyses were suspect. (How can you ever put a dollar amount on the loss of somebody's home site on the one hand or, on the other, on the feeling of security from flooding that a project would engender?) Many mid-valley residents got a reminder of the misery that flooding can cause in the winter of 1996. Without the dams it likely would have been worse. The dams in the Willamette Project were authorized in 1938 and constructed from 1941 through 1968. Throughout those years Congress provided the funds, and it has approved annual appropriations since then to operate and keep them in good repair. They are an example of something very big the federal government has done right. *Hering is the editor of the Albany Democrat-Herald*

(This is one of those sad moments where no comment can say the right thing. The worst part of my job at the FERC were the times when I got the accident reports. I hated to see and hear about those tragic events.)

FOR IMMEDIATE RELEASE

What: RESPONSE TO BROOKFIELD REPORT IN FISHING DEATHS

When: October 8, 2010

Where: Oswego, New York

## **BROOKFIELD RELEASES REPORT IN FISHING DEATHS**

The Brookfield Renewable Power Company released a 60 page report outlining events that led to a fishing tragedy involving two Chemung County men. Leonard Nichols, 45, of Wellsburg, and Clifford Luther, a 52 year-old Horseheads resident, were salmon fishing on the Oswego River on September 28, 2010, with two other men when they were swept away by a sudden release of water from the Varick dam and hydroelectric plant. Nichols died at the scene. Luther survived on life support for nearly a week before succumbing to his injuries on October 5. Brookfield owns and operates the Varick dam and hydroelectric plant. Federal guidelines require hydroelectric plants to sound warning sirens ten to fifteen minutes before the release of water into the river. The purpose of the sirens is to warn fishermen of the imminent release of water and give them time to get away from the river. These guidelines also recommend another warning siren be sounded shortly before the actual release.

Brookfield's report, released on Wednesday, claims all of its warning systems worked properly on September 28th. However, Attorney James Reed of the Ziff Law Firm, who represents the families of both men, says the report is misleading. "If you read the actual data Brookfield supplied with its report, one critical fact becomes clear. **Absolutely no warning sirens sounded for the release of water that killed Len and Cliff.**" Reed pointed to federal guidelines to support his position. "Under the Federal Energy Regulatory Commission's Guidelines for Public Safety at Hydropower Projects, Brookfield was required to sound an audible warning 10-15 minutes before water was released. The Guidelines recommend another warning siren should be sounded shortly before the actual release." In the report, Reed said, "**Brookfield admits its warning siren last sounded at least an hour and ten minutes before the fisherman were swept to their deaths. The report confirms that, contrary to federal guidelines, Brookfield failed to sound warning sirens 10-15 minutes before the deadly release of water that killed these fishermen.**" According to Reed, "Len, Cliff and the other individuals caught in the unexpected rush of released water were experienced fishermen who had safely fished the Oswego River for more than 20 years. They always heeded the warning sirens, including a warning siren earlier that day." "Any suggestion that these were inexperienced fishermen or foolhardy risk takers who ignored safety warnings is simply untrue", Reed said.

Reed has handled lawsuits involving large corporations for almost 25 years. Based on his experience, Reed said he “fully expected Brookfield’s self-serving report would claim it did absolutely nothing wrong and the tragic accident was completely the fault of the fisherman. The company certainly did not disappoint.” Reed says his “prayers go out to the families of the fisherman who died in this tragedy.”

**Sources:**

**GUIDELINES FOR PUBLIC SAFETY AT HYDROPOWER PROJECTS,  
Federal Energy Regulatory Commission.**

<http://www.ferc.gov/industries/hydropower/safety/guidelines/public-safety.pdf>

From the Guidelines:

**Audible Devices** - Audible devices, such as sirens, horns, or buzzers, are generally used to warn of sudden changes in the rate of flow, usually in tailwater areas of spillways or powerhouses. It is also important to provide warnings of sudden changes in operation, such as a gate opening to pass flows that have been cut-off due to a plant shutdown. Sirens should not be used in congested areas where they could be mistaken for emergency vehicles. At projects with heavy fishing and boating use in tailraces, or where difficult terrain prevents a quick exit from the river, advance warning of 10 to 15 minutes may be necessary. It may also be prudent to have a warning sounded shortly before the releases are made. Signs advising of the meaning of the audible devices should be posted along all access points near hazardous tailwater and other areas.

(And, what does the other side say?)

**Lawyer Responds To Dam Operator's Report**

Reported by: Sara Sultanik, 10/08, wetmtv.com

Elmira N.Y. - The lawyer representing the fisherman who died in the Oswego, Jim Reed said the company who operates a dam near the Oswego River did not give the fisherman enough warning before they released water into the river. Reed said a report this week released by that company, Brookfield Renewable Power, stated an alarm sounded a little more than an hour before the release of the water. But Reed said, under federal guidelines it is required for alarms to be sound 10 to 15 minutes prior to a dam opening. Reed said he speculates the company planned to release the water when the alarms were sounded but technical difficulties were a result of the water not being released.



"You're a 16-billion dollar company. Why couldn't you put someone out there to look to make sure no fisherman in the river before you released a large quantity of water," said Reed. Leonard Nichols of Wellsburg died last week after being swept away by rising waters. His fishing partner, Clifford Luther of Horseheads died this week after being hospitalized for his injuries. Reed said both fisherman were experienced and would have known to exit the waters if an alarm sounded.

(What were they thinking when flood water was flowing around a dam during a flood event? – Duh!)

**When 'Judge Wolff cried wolf'**

By John W. Gonzalez - Express-News, 10/09/2010, mysanantonio.com

Eight years after drawing brickbats for questioning the stability of Medina Dam, Bexar County Judge Nelson Wolff has received thanks — and a symbolic piece of the dam — from the entity that operates the nearly century-old structure. Completed in 1913, the dam, which soon will undergo upgrades prompted in part by Wolff's concerns, was seriously tested by 2002's historic rainfall. With water rising, Wolff hit the airwaves warning Castroville and other downstream communities in Bexar and Medina counties that the dam could fail if floodwaters surged over it. Waters came within two feet of the dam's top before subsiding safely, and many residents downstream accused Wolff of overreacting — and overreaching his jurisdiction. But Wolff defended his stance and continued to advocate for improvements to the structure. In February, he won Commissioners Court approval of \$3 million to underwrite stabilization work not covered by its owner and the state. This week, Wolff and



Note: Water flowing around right abutment during flood

commissioners learned the appropriation might not be needed. Will Carter, president of the Bexar-Medina-Atascosa Counties Water Control and Improvement District No. 1, said stabilization cost projections have shrunk in recent months. Estimates had ranged from \$6 million to \$10 million. "The good news for Bexar County is, we thought the upgrades were going to cost \$10 million ... the bid came in at \$3.7 million," Carter said. "Y'all may not even need to write a check," he told commissioners Tuesday. "They were a safety blanket, so we really appreciated it," Carter said Wednesday. "Their role was to pick up the slack, so the odds are, Bexar County won't have to pay anything." Commissioner Paul Elizondo recalled that Wolff took heat for going public with his fears in 2002. When "Judge Wolff cried wolf," Elizondo said, "everybody made fun of him because the dam wasn't even in Bexar County and he was setting off alarms that it was going to possibly break. Well, guess what? He was right." "It would have flooded South Bexar County, so you're just ahead of your time, Judge," Elizondo said.

In 2002, some experts agreed with BMA officials who insisted the dam was safe, but subsequent engineering studies led to recommendations for the upcoming upgrades. Wolff said the dam has proved itself a "great, well-built" structure that provides agricultural, recreational and other benefits. But he reflected that it was hard to endure criticisms of his safety concerns in 2002. "I thought they were going to hang me," Wolff said. Carter indicated that any such animosity is water under the bridge, now that repairs are close to starting and could be completed within a year. A final round of permits is being obtained to start the work, he said. The main task ahead will be installation of 32 vertical cables through the dam into bedrock; concrete aprons will be added at the base of its downstream side. "A year from now, that will be behind us. You won't have to worry about being on TV," he told Wolff before presenting him and each of the four commissioners with softball-size concrete core samples taken from the dam.



*Hydro*

### **State: PPL, others have no case for U.S. Supco appeal of riverbed-rental case**

MIKE DENNISON Gazette State Bureau, The Billings Gazette | October 4, 2010, [billingsgazette.com](http://billingsgazette.com)

HELENA, MT — The U.S. Supreme Court should not accept PPL Montana's appeal of a decision leading to a multimillion-dollar state river lease, because Montana clearly owns the riverbeds under the company's hydroelectric power projects, a top state attorney has told the high court. "PPL repeatedly misstates the record, and that record presents no important federal question," state Solicitor Anthony Johnstone wrote in arguments filed Friday with the U.S. Supreme Court. "PPL does not, and did not ever, have title to the riverbed lands at issue." PPL Montana, the largest private generator of electric power in the state, is asking the nation's high court to overturn a Montana Supreme Court ruling in January that said the state owns the riverbed under PPL's 10 hydroelectric projects on the Madison, Missouri and Clark Fork Rivers. The Montana ruling, which said those rivers are "navigable" and therefore the riverbeds are owned by the state, upheld a state claim that PPL owes \$41 million in back rent for using the riverbeds from 2000-2007. The ruling also allows the state to charge rent in subsequent years.

The U.S. Supreme Court is expected to decide the end of this month whether to accept PPL Montana's appeal. The high court accepts about 1 percent of the 8,000 cases it is asked each year to consider on appeal. PPL has said the Montana ruling either ignored or incorrectly interpreted federal law and earlier court decisions, and should be overturned. Two groups representing Montana water-users, the Cato Institute, a Libertarian think tank, and power-industry groups also have asked the Supreme Court to take the case. They've argued that the Montana court decision is flawed and threatens ownership rights of "thousands of landholders" along rivers, and amounts to a "judicial taking" of private property. Johnstone took on those arguments as well, saying neither PPL nor any landholders have ever owned title to the bed of "navigable" rivers, which were granted to the state at statehood. "(They) will be disappointed by the fact that PPL's deeds and pleadings show it has no riverbed property to take," he wrote. "Given this, the only way 'thousands ... will lose their property rights' is if PPL takes Montana's great rivers from the people who have navigated, enjoyed and owned them since statehood." The Montana decision came in a lawsuit filed in 2003 by several parents of Montana schoolchildren and later taken over by the state. It said the riverbeds used for generating power are school-trust land. Two other power companies — PacifiCorp. and Avista Corp. — settled the case and agreed to pay rent, but PPL Montana has fought the issue in court. The Montana Supreme Court's 5-2 decision said the riverbeds are owned by the state because the rivers are "navigable" streams.

PPL and its allies say the U.S. Supreme Court has ruled that the navigability of a river must be determined "section by section," and that Montana courts didn't follow that standard. Johnstone said ample historical evidence and other court rulings state clearly that the Missouri, Clark Fork and Madison rivers were navigable at statehood, and that brief interruptions by waterfalls or rapids don't make the rivers non-navigable. PPL has "cherry-picked" historical reports and statements on how stretches of the river weren't passable by large, powered watercraft such as steamboats, he said. "What PPL calls a 500-page 'mountain of contrary evidence' is a pile of largely immaterial government reports on vast interstate river basins," Johnstone wrote. "They contain only a molehill's worth of specific historical navigability analysis behind the 50 words PPL quotes in its petition."

(Now, how's this for a great hydro site?)

## Bridal Veil Powerhouse Is Back in Idarado's Hands

by Karen James, Oct 06, 2010, telluridewatch.com

TELLURIDE, Colorado – After spending years acquiring water rights and returning the old Bridal Veil Water System to working order, owner Eric Jacobson has transferred his 99-year lease on the Bridal Veil Powerhouse back to the Idarado Mining Co., from which he acquired it in 1988. In addition to terminating his lease on the historic home and hydroelectric power plant perched vertiginously atop Bridal Veil Falls in 1907 (and added to the National Register of Historic Places in 1979), Jacobson sold various surface and storage water and pipeline rights and deeded the mining company access easements along the existing water system in a deal that closed last month, according to public documents on file with the San Miguel County Clerk and Recorder. "I'm very happy with Bridal Veil and it's going to be with great sadness" that he and his family will no longer live there, said Jacobson of the property he first began pursuing in 1981. "It's our collective identity and it's hard to shed that." Which begs the obvious question: Why leave?



"I'm tired of all the water litigation; there's somebody suing me all the time," he said. "I feel it's necessary," agreed Jacobson's wife, Alessandra. "You can have really blessed things in your life that become a nuisance." "I feel really privileged to have spent 13 years there," she continued, but repeated lawsuits and the reality of trying to raise three school-age children from a bird's nest above the box canyon part-time led the couple to conclude it was time to move on. The family must vacate the property on November 1, but has until next August to remove belongings from the home that was left to fall into disrepair when previous inhabitants left in 1954. After acquiring the lease, Jacobson got the generator back running in 1991, and spent easily more than a decade restoring the structure. He retained the original floor plan and salvaged as much of the original materials as possible. "It's hard to leave," he said. But, comparing himself to "a sculptor that's been beating on his marble for 20 years," he said, "once he has it done, what should he do next?" And so, with the house and generator complete, "it's time to start tapping on another piece of rock." Beyond confirming that Idarado will continue running the hydroelectric power plant, general manager Bill Lyle provided few other details about the company's plans for the property.

Omar Jabara, a spokesperson for the Newmont Mining Corp., which owns Idarado, said: "We are still in the process of transitioning ownership and operation of the power plant. We will be working with the city to evaluate the facility and discuss plans for its future," he wrote in an email to The Watch. "Idarado, in discussions, seemed fully committed to maintaining and preserving the historical status of it," Jacobson said. As for the impact the lease transfer will have on the Town of Telluride's plans to build a new water treatment plant in Bridal Veil Basin, "There's really no implication for us that we know of at this point," said Town Attorney Kevin Geiger. "Everything that we've done has been settled in a court of law and we've been working with Idarado," he continued, noting that while the transaction had the effect of transferring water rights owned by Jacobson to Idarado, it did nothing to decrease the town's water rights.

The larger consequence of the sale may simply be that with Jacobson's departure the Town of Telluride and Idarado are left as the only major water rights holders in the basin. "There are only two principal parties now and the town's not going anywhere," Geiger said. Jacobson, who still retains private mining claims in Bridal Veil Basin, said he envisions that he will continue to play a part in operating the power plant – at least initially. "Since I designed most of the control systems I suspect that we'll all stay happily in touch," he said.

Neither Jacobson nor Lyle would reveal the price of the purchase, but Jacobson said that it was enough to fund a new hydroelectric project he already has in the works. "That really makes leaving Bridal Veil easier," he said.

[\(This is just a fun article to read and a good summary!\)](#)

## **Old Dams, New Power**

### **Powerplant owners are swapping turbines and upgrading powerhouses to wring more generation from old plants**

10/06/2010, By Tim Newcomb, enr.ecnext.com

Large dam upgrades in North America are squeezing every megawatt out of the grid as efficiently as possible by converting century-old powerhouses and replacing decades-old turbines. Construction is under way at several sites, from Pennsylvania to British Columbia. Earlier this month, PPL Montana began upgrading its Rainbow Dam, a 36-megawatt dam on the Missouri River, six miles northeast of Great Falls, Mont., where 200 workers are under the direction of Chicago's Walsh Construction. PPL Montana says the \$230-million, 30-month project is the state's single-largest energy investment in roughly 30 years. David Hoffman, PPL's external affairs director, says the upgrade will increase dam capacity by more than 70% without changing the river flow. PPL will turn 36 MW into 62 MW with a new powerhouse 200 ft. downstream from the existing 100-year-old structure, which has foundation issues. Work on the new eight-unit hydroelectric plant is scheduled for completion by spring 2012. Hoffman says crews already have completed excavation, laid concrete foundations and performed some steel fabrication and electrical work. Crews will build a cofferdam to isolate the construction location and dewater the area in order to rebuild the intake mechanism at the 1,055-ft-long and 29-ft-high structure. An open, concrete-bottomed channel about a half mile in length will send 8,500 cu ft. per second of water to the new powerhouse. The new turbines will rotate slower and have wider flow passages with fewer rotating surfaces, making it easier for fish to pass through unharmed.

### **Help From DOE and ARRA**

Walsh also is updating another 100-year-old PPL-owned structure, the 10-unit Holtwood plant on the Susquehanna River about 15 miles south of Lancaster, Pa. There, PPL took advantage of the U.S. Dept. of Energy's portion of the American Recovery and Reinvestment Act on the \$434-million project to increase capacity by 125 MW, also while improving fish passage on what is currently a 108-MW facility. New powerhouse construction began in January, and the entire project—including two new turbines from York, Pa.-based Voith Hydro—is expected to be complete in spring 2013. The existing powerhouse will remain in operation. Within the Bonneville Power Administration's hydro system, five dam projects totaling \$250 million will help "sustain the backbone of the region's renewable power supply, keep rates low by avoiding the need to develop other, more expensive resources, and reduce the need for fossil-fuel plants," says Katie Pruder-Scruggs, a spokeswoman for BPA. The largest BPA project is a \$120-million turbine upgrade at Chief Joseph Dam on the Columbia River in eastern Washington—the second-largest hydropower-producing dam in the U.S. Under contract with the U.S. Army Corps of Engineers, Alstom Hydro will install 10 new turbine runners by 2014. The new runners and related turbine component repairs and replacements will increase the dam's power generation by more than 40 MW and boost the efficiency of the turbines to 95% or better. A little farther north, BC Hydro is upgrading five turbine units at its Gordon M. Shrum powerplant at the W.A.C. Bennett Dam. Under way this year, the project, being completed by Voith Hydro Canada, will replace one unit per year until all five are in service in early 2017, bringing total production to 310 MW, up from the current 266-MW capacity.

The 1960s-era units currently represent 12% of BC Hydro's power production. Darren Solmundson, BC Hydro's project manager, says each unit takes seven months to finish. BC Hydro cannot afford to take more than one turbine out of service at a time. Improvements aren't limited to utilities. Alcoa Power Generating Inc. began upgrades to its 90-year old, 107-MW Cheoah Dam on North Carolina's Little Tennessee River in August with the aid of \$12.9 million from ARRA and \$110 million from the private sector. The refurbished five-turbine dam will boost production to 129 MW and reduce the plant's dependence on fossil fuels by 60%. Kristen Nelson, spokeswoman for the National Hydropower Association, says that, even beyond what is happening now, looking to add power-generating capabilities to existing non-generating dams looks "particularly promising."

American Municipal Power Inc. is beginning construction on the largest of its six run-of-river power plants on the Ohio River near Maysville, Ky. There, six new powerhouses on existing dams eventually will add 350 MW to the grid. The star of the project is the 105-MW, \$500-million powerplant being installed at the Meldahl Locks & Dams. Contractor Angelo Lafrate, Warren, Mich., is already working on excavation and a cofferdam at Meldahl before getting ready for a cast-in-place, reinforced-concrete powerhouse set on rock for the three

turbine generators. In a similar project, Brookfield Renewable Power has taken over a license and is in the advanced planning stages of a 75-MW powerplant on the Melvin Price Lock and Dam in Alton, Ill.

**MEGAWATTS UP  
WHO IS ADDING POWER AND WHERE**

62MW from 36	Rainbow Dam, PPL Montana 6 miles north of Great Falls
125MW from 108	Holtwood Dam, PPL Montana 15 miles south of Lancaster, Pa.
129MW from 107	Cheoah Dam, Alcoa Power Robbinsville, N.C.
105MW from Zero	Meldahl Locks & Dam, AMP Ohio River near Maysville, Ky.
310MW from 266	Shrum Dam, BC Hydro Hudson's Hope, British Columbia
2,654MW from 2,614	Chief Joseph Dam, BPA Bridgeport, Washington



*Water*

**Dam study: Safety vs. water needs**

By Ben Baeder Staff Writer, 10/03/2010, mercurynews.com

The federally designated "very high risk" Whittier Narrows Dam is proving to be a major stumbling block in efforts to capture and save water. Water agencies and the Army Corps of Engineers since the early 1990s have commissioned studies to gauge the feasibility of storing water behind the 3-mile-long dam, which was built of earth and stone in 1957. It protects 500,000 people from flood, according to the Army Corps. The most recent effort has Rep. Grace Napolitano, D-Santa Fe Springs, and other federal politicians joining local water agencies in an effort to commission a \$375,000 study regarding the safety of storing water behind the dam. The agencies are looking to raise the water level 3.4 feet, which would allow storage of enough water for 2,200 homes per year. At full capacity, the dam could store enough for about 90,000 households, according to Army Corps documents. But based on reports from 1996 and 2008, the dam is unsafe and no water is allowed to be stored behind it, according to the Army Corps. The analyses by Virginia Tech engineering professor James Michael Duncan on behalf of the Army Corps found that the dam had a chance of failing during a once-in-a-lifetime flood. Duncan declined to explain exactly what was wrong with dam, saying, "It's not my job to explain it to the general public." Nonetheless, his data led to the dam receiving the nation's second-worst designation, Dam Safety Action Class II.

The Army Corps' official policy is to disallow any water storage behind a DSAC II dam. If a big storm came and filled the dam to capacity, "The combination of life or economic consequences with probability of failure is very high," according to Army Corps guidelines. Engineers have long known that seepage from a high water table could undermine the dam and cause failure. The Army Corps in 2000 installed a drainage system on the western part of the dam near Montebello to make sure the Corps could quickly drain water in the case of a major storm. The current feasibility study would determine if the corps could break its own rule to allow water storage at the site. The investigation is being sponsored by the county and the Water Replenishment District of Southern California. It calls for catching storm water from the San Gabriel and Rio Hondo rivers, which would be slowly released into spreading grounds down river. "In reality that reservoir behind the dam has way more capacity than what we're asking for," said Elsa Lopez of the WRD. "But we're not asking for much. The whole point is to do the study and make sure it's safe." She called the project's scale a "drop in the bucket," but she also said it was a small step toward reducing the region's dependence on imported water. A 1990s study looked into raising the water by 7.4 feet, but local agencies thought the risk - and the \$6million price tag - was too high. No infrastructure improvements would be needed to raise the water level by 3.4 feet.

The dam, which sits in a natural gap in the hills, was built to hold back catastrophic flooding on the San Gabriel and Rio Hondo rivers - which were not uncommon before a system of dams were built. Water levels have never come close to topping the dam's elevation of 229 feet above sea level. The highest recorded

water level was 216.5 feet in 1967. While the odds of a big storm hitting are slim, it's a possibility residents down river are well aware of, said Pico Rivera Public Works Director Al Cablay. "I teach an environmental management class at Citrus College and I was just telling my students that sometimes we have competing interests," he said. "I think this is one of those. We need to protect our flood plain area, and we need water to live. Saving water is a big deal." Aguanomics blogger and economist David Zetland said the WRD and the county would be getting a good price if they were allowed to store the water. Imported water costs about \$700 per acre-foot, he said.



## *Environment*

(It's a miniscule amount of greenhouse gas, but this should give the environmental movement ammunition to do what they do best, blow everything out of proportion! Another case of so-called scientists gone wild. The "scientists" didn't even bother to compare their results with the savings in air pollution contributed by hydro projects. Here's a news flash – there are over 1.5 Billion cows in the world!!!!!!!!!!!!!!)

### **Climate-Friendly Status Of Hydroelectric Power Questioned**

redorbit.com, 11 October 2010

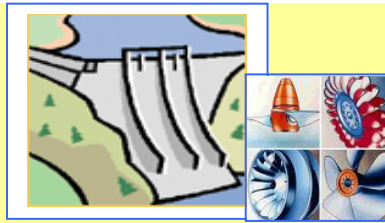
Scientists from the Swiss Federal Institute of Aquatic Science and Technology (EAWAG) have discovered greenhouse gas emissions from reservoirs in Switzerland, raising questions about the climate-friendly status of hydroelectric power. In a study of Lake Wohlten in central Switzerland, EAWAG environmental chemist Tonya Del Sontro and her PhD supervisor Professor Bernhard Wehrli discovered daily methane emissions of 150mg per square meter of surface area or 150 metric tons per year. In a statement, the researchers said that those figures were equivalent to the annual methane output of 2,000 cows, making it "by far the highest emission rate recorded to date for a temperate reservoir."



"Hydropower isn't quite as climate-neutral as people have assumed in the past," Del Sontro said, noting that during the summer months, "the water in Lake Wohlten sometimes looks like champagne with masses of gas bubbles rising to the surface." The emissions discovered by the EAWAG "indicate that run-of-the-river reservoirs can also be significant sources of methane emissions in temperate regions," they said in an October 11 press release. However, Del Sontro and Wehrli are quick to point out that, even if the nearby Aare hydropower plant is responsible for the greenhouse gas emissions, it is still a greener alternative to other power sources. For example, they claim that a nearby coal-fired power station produces 40-times the amount of gases in the form of CO2 without producing any additional energy as a result. Their findings have been published in the journal Environmental Science and Technology. "Preliminary studies there had found 'very high' inflows of carbon-rich material, forming sediment in the reservoir that released greenhouse gases," French news agency AFP said Wehrli told them as part of a Monday article. "However, he underlined that the complex process was highly dependent on temperature, depth and the amount of carbon rich organic material--such as vegetation--that accumulated in the sediment on the reservoir floor."

<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.

10/22/2010



# Some Dam – Hydro News and Other Stuff

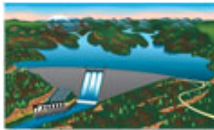


**Quote of Note:** "Democracy must be something more than two wolves and a sheep voting on what to have for dinner." -James Bovard

**"Good wine is a necessity of life." - Thomas Jefferson**

**Ron's wine pick of the week:** Brazin Old Vine Zinfandel, Lodi 2007 (try this one for sure)

**"No nation was ever drunk when wine was cheap." - Thomas Jefferson**



## Dams:

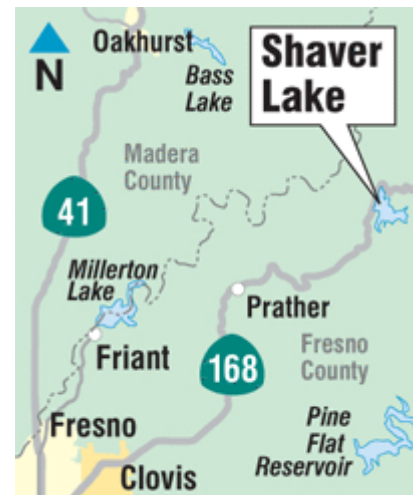
(Go figure – what's more important a safe dam or the fish? It could mean – low lake now or no lake later! In the end, SCE will restock the Lake – it always ends up with that outcome.)

### Draining of Shaver Lake likely to kill most fish

**Dam maintenance project scheduled to start in 2011.**

By Marek Warszawski / The Fresno Bee, [fresnobee.com](http://fresnobee.com), Oct. 11, 2010

SHAVER LAKE, CA -- A two-year dam maintenance project will mean draining Shaver Lake -- likely killing most fish in one of the region's top destinations for anglers. Southern California Edison, which generates hydroelectric power from the reservoir 45 miles east of Fresno, already has lowered the lake 28 feet below the dam's lip so crews can begin rolling a waterproof liner onto the concrete surface. But it's next fall and winter that fishing guides and business owners in this small mountain community worry about. That's when Shaver Lake is scheduled to be drained all the way to stream levels, exposing the base of the dam for the first time since it was completed in 1927. When that happens, from Labor Day 2011 through January 2012, the lake's ample populations of trout, kokanee and smallmouth bass will be in trouble. "The fish that remain will most likely die," said Brian Beal, a supervising biologist with the state Department of Fish and Game. "We're pretty much going to have to start over from scratch." The project is not expected to affect the 2011 fishing and boating season. The lake, which typically drops in winter to make room for spring snowmelt, is scheduled to return to normal recreation levels by Memorial Day weekend.



THE FRESNO BEE

Edison spokesman Bill DeLain termed the project "preventive maintenance" and said the geomembrane liner, made of polyethylene, is necessary to protect the 170-foot-tall dam from erosion and leakage. Workers are scheduled to cover the dam's upper half this fall and winter before tackling the lower half next year when the lake is empty. A black mesh installed between the liner and concrete helps drain water in case of leakage. Edison's plan is for the lake to be full again by Memorial Day 2012, but the fishery could take years to recover. "When they drop it all the way down, we're talking about a mud puddle out there," said Dick Nichols, owner of Dick's Fishing Charters. Added fellow fishing guide Jack Yandell: "We may have a real problem getting the kokanee back. It could be 2015." Many of the lake-related businesses rely on Edison for operating permits. Greg Powell, whose family owns the Shaver Lake Marina and Shaver Lake Sports, said he doesn't believe the project will hurt local businesses too badly as long as there's water in the lake during the peak tourist season. Powell said lake levels after Labor Day dropped more quickly than usual this year, but not enough that he had to move the marina. Almost all the slips are empty, which is normal for fall and winter. "There's nothing I can do to stop this, so there's no sense in getting all worked up," Powell said. Donna Kato, a volunteer at the Museum of the Central Sierra, said many visitors have concerns about the project. "People want to know what's going to happen to the fish," Kato said. Shaver Lake is best known among fishermen for its ample rainbow trout and kokanee, a landlocked sockeye salmon. Between 8,000 to 10,000 pounds of rainbow trout weighing about half a pound apiece are planted in Shaver Lake each year by the DFG. About 50,000 kokanee fingerlings are planted each May, an effort largely funded by private fishing clubs. The lake is also home to a highly reproductive population of smallmouth bass, which was introduced by the DFG in the early 1980s.

Shaver Lake began in the 1890s as a sawmill pond on the San Joaquin River watershed. The small earth dam that created the pond still lies in the middle of the lake, but no one knows whether it will hold water. Retired DFG fish biologist Randy Kelly said salmonoids such as trout and kokanee that require cold water and ample oxygen will have it the toughest. When the lake empties, Kelly predicted some fish will find their way downstream. Those that remain will be crammed into small pools, susceptible to predators -- including humans, animals, birds and other fish -- and freezing. "It's like taking the city of Fresno and pushing everyone who lives there into the city of Pinedale," Kelly said. "Some people are going to take exit routes, but the rest are going to be crowded together and fighting for food." There are no plans to move fish from Shaver Lake to other waters. "If there was an endangered or threatened species in the lake we'd think about it, but not for sport fish," Beal said. "Plus, we don't really have any place to take them." According to Beal, Edison has yet to file environmental documents regarding the dam maintenance project. But he expects the company will be required to help pay to restock the lake. For example, when Bass Lake was partially drained for dam repairs a couple of years ago, PG&E was required to pay for one-third of the lake's annual trout allotment, said Greg Kollenborn, who supervises all the DFG hatcheries in Region 4. "Shaver is a big destination lake to a lot of anglers, so we're trying to put a lot of priority on [restoring the fishery]," Kollenborn said. Some locals aren't willing to wait to see the plan DFG and Edison come up with. At a meeting Thursday at Camp Edison that included fishing guides Nichols and Yandell, several business owners, three biologists employed by Edison and Kollenborn, the group discussed ways to raise money for restocking the lake in May 2012. There is also talk about turning Shaver Lake into a designated trophy trout fishery, which could attract more anglers. Kokanee, because of their three-year life cycle, will take longer to recover. "We are going to try our best to restore what could be a total loss," Nichols said. Meanwhile, businesses are trying to make the best of the situation. Anticipating a trove of treasure hunters next fall when the lake sits empty, Powell said he plans to order a shipment of metal detectors. "I figure if I can't rent boats, I might as well rent something," he said.

(Looking at the history of how this project got to this point gives a distinct image of a botched situation that begs for a restart!)

## **Clock Ticking on Dam**

### **City councilors agreed Thursday to postpone until Oct. 21 the first reading on a resolution to save the Upper Roberts Meadow Dam by Using Micro-Hydro Power**

October 8th, 2010, Posted by Mary Serreze, northamptonmedia.com

NORTHAMPTON, MA — The Friends of the Upper Roberts Meadow Dam turned out in force Thursday night, hoping for a City Council expression of support for their efforts to save the 19th-century structure using hydropower revenues. The dam is located off Chesterfield Road in Leeds. The council, however, chose to postpone a vote on the non-binding "Save the Dam" resolution until their Oct. 21 meeting, citing a need to study a new hydropower feasibility review prepared by the engineering firm Tighe & Bond. Others, including City Councilor Eugene Tacy, whose ward includes the dam, said that a public forum should be held before a final decision is made. On Friday, City Council President David Narkewicz announced that the forum on the dam will be held on Wednesday, Oct. 27 at 7 p.m. at the John F. Kennedy Middle School on

Bridge Road. He said he would work to establish a format over the coming week. On Thursday councilors discussed inviting engineers from both sides, from Tighe & Bond, and from the Office of Dam Safety. City Energy and Sustainability Officer Chris Mason will be asked to present the Tighe & Bond study to the City Council at their October 21 meeting, Mayor Higgins said.



The Tighe & Bond review looked at existing hydro feasibility engineering reports — those prepared by the Essex Partnership for the Friends, and those prepared by GZA GeoEnvironmental Inc. for the Department of Public Works — and weighed in with a third opinion. The review concluded that hydropower would not be a money-maker at the site.

(See related story: *Engineers to City: Dam Not Hydro-Logical*, posted on Sept. 8, 2010.) The Friends hope to pay for the dam's preservation with hydroelectricity revenues and with private fundraising, but they've been locked in an ongoing battle with the Board of Public Works (BPW), which maintains that the Friends' numbers don't add up. The BPW voted two years ago to take down the dam, citing pressure from the state's Office of Dam Safety. Unless the board changes its mind, that vote will stand. The resolution before the City Council seeks non-binding endorsement of the hydropower and dam preservation effort, but only if it proves to be "revenue-neutral."

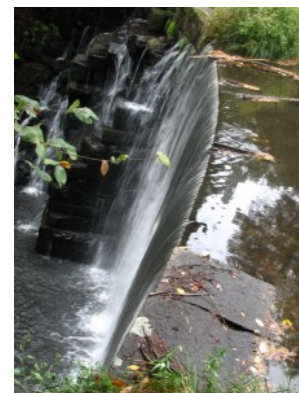
### Floating Decimal Points

Friends spokesperson Dee Boyle-Clapp told NM on Thursday that her group has backed down from its earlier assertion that the cost of installing a hydro facility would be as low as \$100,000. "Our engineer (Essex Partnership) now says it will be \$200,000 to 400,000," she said. But Essex has not submitted detailed engineering plans nor any formal cost estimates. Engineers working for the city still peg hydro facility costs at \$750,000 to \$1 million. And in a big reversal, Boyle-Clapp acknowledged Thursday that the Friends now concede that electricity generated at the dam could not be sold at retail prices in an arrangement known as "net metering." She then asserted that this cut in projected electricity revenues is irrelevant when assessing the project's feasibility because the Friends have a plan to do things differently from the way the city envisions things. John Clapp, speaking for the Friends, told the City Council that since the group would raise all of the money for their project, there would be no cost to the city. "It's a gift," he said. The Friends continue to press for a partnership with the BPW in the grant application process, an arrangement that city officials have resisted.

BPW chairman Terry Culhane has said the Friends have no standing to apply for grants for the dam because they don't own it — the city does. In a Sept. 1 email to the City Council, Culhane explained that the BPW is reluctant to partner with the Friends on fundraising efforts because of the cost, time, and low apparent likelihood of success. "The heavy lifting (in applying for grants) would fall upon the DPW engineering staff and paid outside consultants," wrote Culhane. "This project is awash in red ink, and the prospects for outside funding look dubious, particularly on the scale of almost two million dollars [for all permitting, engineering and construction costs]."

### A "Waste of Taxpayers' Dollars" and a Nov. 1 Deadline

Speaking Thursday night for the Friends, John Clapp said that the type of hydro the group is proposing does not require dredging of the upstream pond, and that eliminating that step would save \$500,000 in project costs. Clapp also called for a reclassification of the dam's state-issued hazard rating, which he said would reduce future mandated maintenance and inspection costs. The dam is currently classified as a "high-hazard" dam in poor condition. Clapp called the Tighe & Bond study a "waste of taxpayers' dollars" that should be ignored because the underlying assumptions that went into it are flawed. The Friends also contest studies showing that the village of Leeds would be inundated were the dam to fail. "There's only 6 million gallons of water in that reservoir, not 16 million," said Dave Hershings for the Friends. "There is no emergency." The battle between the Friends and public works officials has become more heated in recent days.



In Oct. 7 email to the City Council, for instance, DPW director Edward "Ned" Huntley accused the Friends of submitting "misleading documents" to the City Council in their effort to gain political support for dam preservation. The Office of Dam Safety recently granted the city a 30-day extension — the third extension in

two years — and wrote in an Oct. 6 emailed letter to the city that it must comply with a Nov. 1 deadline to say whether the dam will be fixed or taken down. But with the forum scheduled for Oct. 27, the earliest a second and final City Council vote could take place is Nov. 4, three days after the state's deadline for action. How that will play with state officials is unclear.

(Another dam removal. Did I spell Dam right?)

## **Wash. approves permit to remove Condit Dam**

**PacifiCorp is one step closer to removing the Condit Dam on southwest Washington's White Salmon River, following a decision Tuesday by Washington state regulators to issue a water quality permit.**

By SHANNON DININNY, Associated Press Writer, October 12, 2010, [seattletimes.nwsources.com](http://seattletimes.nwsources.com)

YAKIMA, Wash. — **PacifiCorp is one step closer to removing the Condit Dam** on southwest Washington's White Salmon River, following a decision Tuesday by Washington state regulators to issue a water quality permit. Portland, Ore.-based PacifiCorp has planned for years to remove the dam rather than pay for expensive upgrades needed to relicense it, but the utility delayed removal while awaiting necessary permits. **The dam, built in 1913, sits about three miles upstream of the confluence of the White Salmon and Columbia rivers.** PacifiCorp needed certification from the Washington state Department of Ecology that water quality standards would be met during dam removal and subsequent habitat restoration. Following a multiyear process, the department announced in a statement Tuesday it has issued that certification. **The certification makes it possible to remove the dam and still meet the objectives of the Clean Water Act to restore and maintain the nation's waters,** said Polly Zehm, the Ecology Department's deputy director. "Removal of the dam will allow the river to return to its natural free-flowing state," she said. The White Salmon River borders Klickitat and Skamania counties. License renewal by the Federal Energy Regulatory Commission for the hydroelectric dam would require upgrades for fish passage. **Once the dam and old cofferdams within the river bed are removed, lower Columbia River Chinook salmon will have unrestricted access to about 14 miles of historic habitat, and steelhead will gain unrestricted access to about 33 miles, according to the Ecology Department.**

**PacifiCorp spokesman Tom Gauntt said the utility still needs permits from the FERC and the U.S. Army Corps of Engineers for removal, which is slated for fall of 2011.** The utility serves 1.6 million customers in Oregon, California, Washington, Idaho, Utah and Wyoming, and is owned by MidAmerican Energy Holdings Co., a unit of Warren Buffett's Omaha, Neb.-based Berkshire Hathaway Inc. PacifiCorp operates as Pacific Power in Oregon, Washington and northern California. Earlier this year, PacifiCorp reached agreement with American Indian tribes, farmers, salmon fishermen, conservation groups and state officials for removal of four hydroelectric dams from the Klamath River in southern Oregon and northern California. The sides have been fighting over water there for a century. **Removing the dams is widely seen as a key to restoring dwindling West Coast salmon runs, but removal is not scheduled to start until 2020.**

(This is a bombshell. Someone may not have been paying attention! In Europe and other Countries, people get sentenced to jail or worse for such things.)

## **Months-old photo shows apparent leak in dam**

**Hungary starts investigation of inspections**

boston.com, By Pablo Gorondi, Associated Press / October 13, 2010

BUDAPEST, Hungary — **An aerial photo taken months before a gigantic reservoir unleashed torrents of toxic sludge shows a faint red trail trickling through the container wall** — part of a growing body of evidence that inspectors who gave the pit a clean bill of health may have missed warning signs. Police are examining the photo as part of an investigation into how part of the wall containing the 350 million cubic feet of caustic slurry could have given way. **Inspectors from the government environmental agency inspected the container pond less than two weeks before the spill.** Gyorgy Bakondi, appointed to the newly created post of disaster commissioner Monday night, said yesterday that the inspections were under investigation, including contentions by environmental inspectors that "they had found everything in order."



Judicial authorities scheduled a court appearance for Zoltan Bakonyi, managing director of MAL Rt., or the Hungarian Aluminum Production and Trade Co., which owns the reservoir, to decide whether he should be formally charged and whether he should remain in custody. Bakonyi was taken into police custody Monday and was scheduled to appear at a preliminary court hearing today. The photo showing an apparent leak on the northern wall of the reservoir — the same wall that partially collapsed — was taken by Interspect, a Hungarian company specializing in aerial photography. It invests some of its profits in environmental projects, such as taking photos of locations that could pose an environmental risk. Gabor Bako, Interspect director, said he shot the photo June 11, nearly four months before the Oct. 4 spill. He said the company shared the photo with universities and environmental groups, "but no further steps were taken in the matter" until the wall collapsed, freeing caustic muck that flooded three villages before being carried by waterways into the Danube River. Although Interspect found many suspicious sites around the country, "we're not construction engineers or specialists who could interpret what the picture showed," he said. He was still hoping to gather specialists to review the photos. A police statement suggested Bakonyi was guilty of negligence, saying he did not prepare a warning and rescue plan to be implemented in case of an emergency. There was no official information on what Bakonyi told police, with law enforcement officials declining to divulge details on the progress of their investigation. But according to the daily Blikk, which is considered to have good police connections, a lead engineer at MAL Rt. told police that the company's top management was aware of — but kept quiet about — the risks of a breach of the reservoir for an unspecified period.

The tabloid also revealed that in the 1980s, before the fall of the Iron Curtain, Bakonyi's father, Arpad, was the head of the environmental department at the Ministry of Industry — a predecessor of the present-day inspectorate — and received several state awards for his work. In an initial reaction after the spill, Zoltan Bakonyi said the reservoir was patrolled daily and "did not show any physical signs that something of this nature could happen." But Prime Minister Viktor Orban suggested that preliminary investigations had revealed negligence played a part. "We have well-founded reasons to believe that there were people who knew about the dangerous weakening of the reservoir wall, but for personal reasons they thought it wasn't worth repairing and hoped there'd be no trouble," Orban said. Bakondi, the disaster commissioner, said that police had taken over security tasks at all premises belonging to the company and that production at the plant could restart during the weekend, although a final decision had yet to be made. Bakondi leads an 18-member supervisory committee that will have to approve practically everything happening at MAL from now on. The government rejected allegations that it was using the disaster as an excuse for ruling by decree. "This is not the nationalization of the company," said Anna Nagy, government spokeswoman. "It is placing it under government supervision until the catastrophe is resolved."

(This is not good news. Remediation looks expensive, but very necessary.)

## Anderson Dam could "significantly slump" from quake, water district says

Oct 13, 2010, By Morgan Hill Staff, morganhilltimes.com

Location: Coyote Creek in Santa Clara County, California, near Morgan Hill, CA

The Santa Clara Valley Water District has received preliminary findings from an ongoing seismic stability evaluation for Anderson Dam that detail part of the dam could experience "significant slumping" if a 7.25 magnitude earthquake were to occur on the Calaveras Fault within about a mile of the dam. As a result, the district's dam operators will keep the water at no higher than 57 feet below the dam crest until further analysis is completed. Currently, the water level at Anderson Reservoir is at approximately 60 feet below the dam crest, which amounts to 48,806 acre-feet. The California Division of Safety of Dams and the Federal Energy Regulatory Commission, which also has regulatory authority over Anderson Dam, have stated that an additional safety measure is appropriate, and are reviewing this proposed change in operation.

Since January, 2009, Anderson Reservoir has been operating under a water level restriction of 20 feet below the spillway - 40 feet below the dam's crest. This restriction was set by DSOD based on a review of data that existed at the time, which appeared to indicate the presence of alluvium - gravel and sand from the underlying former creek bed - under the upstream dam shell. In January, 2009, the district hired a highly qualified geotechnical consulting firm to conduct the evaluation of the dam. Since then, the consultant has drilled borings at various locations on the downstream and upstream faces of the dam and conducted laboratory testing and engineering analysis to determine if the materials used to construct the dam are sufficient to withstand a major quake. To date, the analysis has found loosely compacted layers of liquefiable materials in the lower portions of the dam. These materials are susceptible to a reduction in strength when subjected to severe earthquake shaking. The consultant will continue the analysis to estimate the potential for damage to the downstream slope. The final report is scheduled to be completed by May 2011. These initial findings indicate that remediation will be necessary to correct the deficiencies and allow

for the reservoir to be safely filled to its capacity. Conceptual remediation alternatives will be developed as part of the ongoing analysis and included in the final report to be completed in May 2011. The water district plans to complete seismic safety evaluations on eight of its dams by 2013. The reservoirs are an important component of Santa Clara County's water supply, but also provide environmental benefits and recreation. In addition, the reservoirs help provide flood protection for homes and businesses downstream.

(They finished the Dam bridge. I still think they ruined the best aerial photo of a dam.)

## Hoover Dam Bypass Dedication Thursday Bridge Opens To Traffic Later In Month

fox5vegas.com, October 13, 2010

BOULDER CITY, Nev. -- For Boulder City residents, the opening of the Hoover Dam bypass bridge later this month will mark the start of a new era. For more than five years of construction and two decades of planning, the finishing touches are being completed on what is now one of the tallest bridges in North America. Michelle Kaposta, who has lived in Boulder City for 20 years, said she remembers when the span behind the dam was empty space. "I'm glad it's finally being opened, and hopefully it will bring more people into the town," she said. Bypass project manager Dave Zanetell led a team of 400 engineers in building the longest concrete arch in the western hemisphere. He estimates that 20,000 vehicles will be able to move across the bridge, forgoing the slow dam traffic or, for semi-trailers, the detour through Laughlin. "To do something that will stand proudly beside Hoover Dam for many, many generations, we're very honored," he said. The bridge stands 890 feet above the Colorado River and will have a pedestrian walkway that will be open during daytime hours. The bridge was officially named the Mike O'Callaghan-Pat Tillman Memorial Bridge. O'Callaghan, who died in 2004, was a Korean War veteran and a former Nevada governor who is widely considered to be among the state's most popular, and Tillman, who left his career with the Arizona Cardinals to enlist in the military. He was deployed to Afghanistan, where he was killed.



(It only takes one dam failure to get the blood pressure level up! Lack of inspection staff – sounds like the familiar problem that occurs in U.S. I hate it when some organization has a 0.5 employee! Is that the top half or bottom half? What happened to a whole employee?)

## No B.C. dams at risk of collapse, environment minister says

Barry Penner says nine structures identified as high risk in Environment Ministry documents were repaired

By Lori Culbert, Vancouver Sun October 14, 2010, vancouversun.com

The environment minister is confident no dams in the province are at risk of collapsing, following rapid inspections this summer of 60 per cent of all B.C. dams. "We don't believe that there are any dams that pose a high risk to the public," Barry Penner said. His ministry released a report Thursday based on the so-called rapid assessments completed on 1,132 dams this summer following the failure in June of the Testalinden dam near Oliver, which badly damaged 14 properties. The report identified four problem dams, which received immediate repairs, and 379 dams requiring less urgent work, which is being done on a priority basis and could take two years to complete. Penner was also responding to a story published Thursday in The Vancouver Sun based on freedom of information documents obtained from his ministry, which indicated nine additional B.C. dams were deemed at high risk to collapse. It was confirmed during the summer inspections that those nine dams had also been fixed, he said.

The repairs made to the four problem dams identified in the government's report include:

- Goertzen Pond near Osoyoos: reservoir pumped out to a "safe elevation" below the dam crest.
- Grafton Lake on Bowen Island: beaver dam removed to clear spillway.
- Eagle Rock Reservoir near Chase: spillway cleared of obstructions.
- Allan Spring in Saanich: spillway lowered and cleared.

The 768 B.C. dams that were not assessed this summer were deemed to be very low risk. Penner said the government has made improvements to the dam safety program, including new record-keeping, information sharing and emergency call-out procedures; new signs for dams that could cause damage if they fail; more training for ministry staff and dam owners; and hiring four new dam safety employees. The number of dam safety employees dropped from 8.5 to 5.5 in recent years, which resulted in falling "slightly behind on

scheduled audits and left little time for follow-up of [safety] issues," the report said. Penner said that the low staffing levels were a problem, but that the new hires will begin to address those concerns. He also agreed inspections and maintenance of the 52 dams owned by his own ministry must improve as well. One of the most at-risk dams identified in the FOI documents obtained by The Sun is owned by the Environment Ministry. NDP environment critic Rob Fleming said he fears there could be another Testalinden-like accident because the Environment Ministry is in "crisis mode" after enduring budget cuts, and is merely "trying to contain things after they go wrong" instead of being proactive with safety. The Environment Ministry also vowed in the report to take action on all 12 recommendations made by the Solicitor-General's Ministry in July, as a result of its review of the Testalinden accident. The recommendations were aimed at preventing another dam failure.

(Aren't they talking about an Emergency Action Plan (EAP). Funny thing on the way to the dam, no one mentioned why they have an EAP or why they do the annual test of the EAP?)

### **Dam owner's planning helped limit flooding problems**

BY NATHANIEL SHUDA • CENTRAL WISCONSIN • OCTOBER 17, 2010, wisconsinrapidtribune.com

As the owner and operator of five hydroelectric dams along the Wisconsin River, Consolidated Water Power Co. was front and center during last month's flooding. In February, leaders of the Wisconsin Rapids-based, wholly owned NewPage Corp. subsidiary conducted an annual review of the high water action plan -- something that better prepared them for a record-setting, 100-year event, Consolidated President Tom Scharff said. "We intentionally do it in



February because of the spring runoff that usually occurs anywhere from mid-February to the end of April," Scharff said, noting the plan goes into effect when the river reaches a flow rate of 10,000 cubic feet a second. "Typically, we see elevated flows in the spring of anywhere between 30,000 and 40,000," he said. "As the flows increase, we contact a greater number of people."

When it comes to controlling the river during a flood event, such as the one that affected communities across central Wisconsin about three weekends ago, planning starts as soon as officials hear water levels might become an issue, Scharff said. "We started getting notification on Tuesday and Wednesday -- the National Weather Service called and gave us that heads up -- and with that magnitude of a forecast ... consequently, we started scheduling out manpower and getting equipment in place." Only a few gates on the dams -- located in Wisconsin Rapids, Biron, Whiting, Stevens Point and in Marathon County's Lake DuBay -- are automatic, which means Consolidated employees must be on site to control them manually, Scharff said. The DuBay dam is a peaking facility, meaning the Federal Energy Regulatory Commission allows Consolidated to use it to hold back water, which it did in an attempt to give communities what Scharff called a buffer zone. "At that time, we were concerned about the Kilbourn dam and, ultimately ... about the levees down at Portage," he said. Throughout the weekend, Scharff kept local municipal officials updated through a series of emergency management briefs, supplying officials with the information they needed to better plan their response. "Everybody in this community has recognized the outstanding job (Consolidated) did," Wisconsin Rapids Mayor Mary Jo Carson said. "I have the utmost respect for all those folks." NewPage remains in talks with the Great Lakes Utility, a consortium of eight municipally owned electric utilities, including those in Wisconsin Rapids and Marshfield, that previously agreed to negotiate the purchase of the dams for about \$70 million. "At this point, it became glaringly clear if you're going to own those dams, you've got to have somebody like Tom Scharff running them," Carson said. In a recent statement of thanks to the company, Stevens Point Mayor Andrew Halverson expressed the value of Consolidated's commitment to controlling the river. "Pass along my intense respect and how impressed I have been with their professionalism throughout this event ... how well they handled coordination of their facilities up and down the river," Halverson said.



## Hydro

(You'd a thunk 20 years woulda been enough, but both sides seem to be on different pages!)

### Eau Claire committee takes up decades old deal for dams

Oct 12, 2010, [www.wqow.com](http://www.wqow.com)

**Eau Claire County (WQOW)** - Eau Claire County, Wisconsin says 20 years of waiting is long enough. It could end a deal with a company to produce hydro-electric power. 20 years ago, the county reached a deal with the Rock River Power and Light Corporation to lease the dams on Lake Altoona and Lake Eau Claire. The company was interested in developing hydro-electric power there, but after a few attempts to get the right permits, nothing happened. So, Tuesday night the Parks and Forest Committee will consider ending the agreement. That's news to the power company involved. It says it's been waiting to hear back from the county for several years and is still interested in going forward with the project. The company says it needed to know if a fish ladder was needed at the site before it could go ahead with permitting. Xcel Energy, which had nothing to do with this deal but does operate hydro-electric dams, says western Wisconsin is ideal for this kind of power. "The Chippewa River is unique because of its drop in elevation, rivers that have drops in elevation where you can get more head provide a better opportunity for hydro generation and we happen to have that throughout here in western Wisconsin," says Brian Elwood, Xcel Energy Communications. Xcel energy operates 19 hydro-electric dams in western and northern Wisconsin. Combined they can create enough energy to run more than 250,000 homes. The Parks and Forest Committee meeting is scheduled for 5:00 pm in Altoona.

(Is anybody listening?)

### Even As Dams Are Coming Down Some Want More Hydropower

[news.opb.org](http://news.opb.org), Rob Manning | October 14, 2010 | Portland, OR

A day after Washington state officials gave the go-ahead to embark on one of the biggest dam removals in history, the region's electricity planners heard a pitch to expand hydro-power. PacifiCorp's Condit Dam on Washington's White Salmon River could come down in a year, depending on federal approvals. Meantime, hydro advocates told the Northwest Power and Conservation Council it's possible to add thousands of megawatts of hydropower, without harming the environment. Andrew Munro with the National Hydropower Association pointed to the Midwest, where federal dams are changing. Andrew Munro: "These are existing Army Corps dams that were never utilized for energy generation. And it's bringing construction jobs and it's bringing new renewable energy to that part of the country." A representative of a Washington utility said they've looked at 145 possible new hydro sites, but may wind up with fewer than five actual projects. Power council staff say in the rare instances when good locations can be found, what's called "sustainable hydro" can offer electricity at a competitive price.

(Not sure what the photo has to do with small scale hydro but it is great scenery)

### Small hydro holds promise for Oregon

by Lee van der Voo, Sustainable Business Oregon, October 14, 2010, [sustainablebusinessoregon.com](http://sustainablebusinessoregon.com)

Ten days. That's how long the new Juniper Plant – a hydropower generation plant about four miles north of Bend – ran in 2010. Built by the Central Oregon Irrigation District, the \$24 million plant began generating power Oct. 4 after a yearlong construction. It shuts down Thursday, marking the end of the district's irrigation season and a new landmark in power generation for the agency. For COID, 10 days of power generation were 10 days of promise. The district's new unassuming facility off Highway 97 is a symbol of gradual efforts to use hydropower to offset the rising cost of supplying water to farms. "The benefit is that its renewable energy and the second is that it does create an additional line of revenue for the district that helps keep our assessment rates for the district — it doesn't eliminate them, but it keeps them lower," said Steve Johnson, district manager for COID.



Small-scale hydropower projects like this one represent a largely untapped energy source for the state — Energy Trust of Oregon is probing 30 possible projects at irrigation districts alone. Not only do they offset the cost of doing business, but they also enable irrigation districts to replace ditches with pipes, leaving more water in streams and meeting expanding environmental goals and regulations. COID supplies water to 3,600 locations across 45,000 acres along the Deschutes River. The district operates with very little power – its irrigation channels are gravity fed. It first tried hydropower as a revenue-generating option with its Siphon Power Project near Bend's Old Mill District in 1989. That 5-megawatt hydropower plant now brings in \$300,000 to \$400,000 in additional revenue annually, after debt service and operating costs. The Juniper Plant will now do the same. The 5-megawatt plant was built with \$10 million in support from grants and a state tax credit. As Juniper provides power to PacificPower, Johnson expects to see the plant add another \$100,000 in revenues to COID's budget next year, a sum that will grow to \$300,000 after five years of debt service. It's among a handful of hydropower projects COID plans for the future.

Jed Jorgensen, senior energy project manager at Energy Trust, is charged with helping hydropower development along as such development helps Oregon utilities meet renewable energy goals. He said Energy Trust is promoting hydropower at existing dams or at storage and flood control facilities. "A lot of folks feel that those are low-hanging fruit to develop capacity, if they can be done in ways that would improve fish passage or other natural resource issues" he said. Energy Trust won't consider hydropower projects that add dams to Oregon rivers and streams, Jorgensen said. Irrigation districts, however, tend to be comprised of canals where water is either falling or can be piped to fall at a vertical distance, creating a force that can easily generate power on its way to customers. Permit requirements for irrigation districts do not allow the districts to draw water just to develop hydropower, limited production to water already flowing by. Those limits haven't stopped hydropower from being a good resource for districts looking to recover costs. At the Swalley Irrigation District, general manager Suzanne Butterfield expects hydropower production to garner between \$160,000 and \$190,000 annually. That district's .75 megawatt system came online in April. All but \$2 million of its \$14.5 million cost was paid for with grants from conservation and other agencies. The project, which converted a 5-mile canal to a 5-mile pipeline, restored about 18 million gallons of water daily to the Deschutes River, a permanent move that represents the single largest water contribution back to the river.

Jan Lee, executive director of the Northwest Hydropower Association, said hydropower has other benefits. "Hydropower is generally stable, around the clock," she said. And environmental impacts are few when hydropower capacity is added to existing diversions. Other benefits include the added safety and security of decentralized power facilities, and the ability for local ownership and revenue generation. Hydropower facilities also have a long lifespan, from 50 to 100 years, "so if you install hydropower you know it's going to be there for a while," she said. Lee said urban water districts can also develop hydropower facilities along pipelines. She points to Portland, which recently acquired a permit to add a hydropower plant to the Vernon Water Tower Park at Northeast 15<sup>th</sup> and Killingsworth Avenues. Other possibilities include hydropower at reservoirs, and hydropower pump storage, which has the potential to serve as a backup for wind power.



## Environment

(I never harassed a fish. I don't like fishing. I do my fishing at the Safeway fish counter where I always get the size fish I want and it's a lot cheaper than fishing.)

### **Article: U.S. wants to declare Atlantic sturgeon as endangered species**

The Virginian-Pilot (Norfolk, VA), October 7, 2010, By Scott Harper

The federal government is proposing to give endangered-species status to the Atlantic sturgeon - a large, plated, prehistoric fish - in the Chesapeake Bay and along the North Carolina coast. The decision comes after three years of study and a petition from an environmental group urging that it be declared endangered. If approved after a public comment period that ends in January, the status would bring a host of protections and restrictions to Virginia, Maryland and North Carolina - so many limits that some fishing groups worry they might be fined for accidentally snagging a sturgeon. "It cuts both ways, with pros and cons," said Chuck Frederickson, the river keeper for the lower James River, where a resurgent population of sturgeon can be found. Frederickson said federal protections under the Endangered Species Act, intended to keep the fish from becoming extinct, might also bring more national attention and funds to help revive the ancient sturgeon. Brownish-orange in color and weighing as much as 600 pounds, Atlantic sturgeon have been

around for millions of years. They once were so bountiful that colonists at Jamestown were said to catch and eat them. But they take an abnormally long time to reach sexual maturity and have suffered from boat strikes, pollution, lost habitat, dredging of navigational channels and dam construction. A coast-wide ban on fishing for Atlantic sturgeon has been in place from Maine to Florida since 1998. But even that measure has not helped much.

In its announcement, the National Marine Fisheries Service broke the coastal population into five groups. Those sturgeon in the Gulf of Maine are proposed to receive threatened status, while fish in the New York Bight, the Chesapeake Bay, off North and South Carolina, and off the South Atlantic coast would be classified as endangered. Such a status prohibits the "taking" of any sturgeon, which the government defines as "harassing, harming, pursuing, wounding, killing, trapping or collecting." Frederickson said the James River Association has been working under a special state permit for years to research and restore sturgeon in conjunction with fishery experts at Virginia Commonwealth University, the Virginia Institute of Marine Science and the U.S. Fish and Wildlife Service. For that work to continue, the scientists will need to get permission from the federal government as well. "It may add a few more hoops, but we expect to keep our efforts going," Frederickson said. He noted that a first-ever sturgeon spawning reef was completed earlier this year on the James River in Chesterfield County, south of Richmond.

(No one knows if dam removal on the Klamath River will be a good or bad economic decision. The fish may be happier but when an economist calculates a number to 8 significant figures over 11 years, you have to be suspicious. Where did he get the \$4.00 in that \$20,676,604 number????????? I wonder how many full-time jobs. Is it any wonder that there are more jokes about economists than most professions?)

### **Report: KBRA, dam removal should benefit Siskiyou economy**

By David Smith, Siskiyou Daily News, siskiyoudaily.com, Oct 14, 2010

Siskiyou County, Calif. — "Were the actions called for in the settlement documents to occur, they would have significant positive impacts on the economies of Del Norte, Humboldt, Klamath, and Siskiyou Counties," Dr. David Gallo states in a report released Tuesday regarding the estimated economic gains of implementing two agreements on the Klamath River. The Klamath Hydroelectric Settlement Agreement (KHSa) and the Klamath Basin Restoration Agreement (KBRA) call for the potential removal of four dams on the river and the restoration of fisheries and assurances of water deliveries for agricultural diverters.

Gallo's study, which was commissioned by California Trout and PROSPER, includes inputs to the economy from construction activities – such as dam removal and hatchery construction – and restoration, monitoring and reintroduction activities, which are prescribed in the KBRA. According to the report, Gallo used an economic input-output model, IMPLAN, to determine "the total impact on county and regional income and employment." The estimated average business revenue for Siskiyou County over an 11-year period is \$20,676,604. Gallo shows, based on local-level activities estimated to inject money into the county's economy. Included in the estimate is an average increase in jobs over that same period of 298 full-and part-time jobs. One of the largest benefactors, according to Gallo's assessment, would be agriculture, due to the prescribed water delivery assurances in the KBRA. He did explain that further analysis would be necessary to fully assess the potential gain for agriculture, however. Gallo also states that he believes the coastal counties would receive the most benefit from an increase in fish numbers, due to the use of their ports by commercial fishermen. Gallo explains in the report that he believes the economic benefit estimate is conservative because it is based on the assumption that dam removal will cost approximately \$60 million (Must be wrong?), noting that the KHSa calls for approximately \$450 million for dam removal and some restoration activity. Other assumptions listed in the report include an assumed doubling of the Chinook salmon population due to restoration activities and dam removal, as well as the assumption that outside contractors will be utilized for the dam removal itself. Gallo also notes that the potential risks and costs associated with dam removal and KBRA activities were not assessed in the study.

P.S.

Re Last week's Quote of Note, I have been informed that someone doctored up Cicero's quote so here's the explanation and corrected quote:

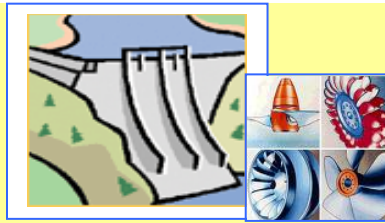
*The alleged quote from Marcus Tullius Cicero that began circulating on the Internet in October, 2008, is based on a true statement from the great Roman orator, but someone added a lot to it to make it match some of what the United States was facing economically.*

*The actual quote is: "The arrogance of officialdom should be tempered and controlled, and assistance to foreign hands should be curtailed, lest Rome fall."*

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<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.

10/29/2010



## ***Some Dam – Hydro News and Other Stuff***



***Quote of Note:*** *“If you really want to do something, you’ll find a way; if you don’t, you’ll find an excuse.”* --Anonymous

***“Good wine is a necessity of life.”*** - -Thomas Jefferson

***Ron’s wine pick of the week:*** Copain Tous Ensemble Syrah 2007

***“No nation was ever drunk when wine was cheap.”*** - - Thomas Jefferson

### ***Other Stuff:***

(You may have seen this, but it’s worth another look – click on link below)

#### **Hurricane Homes**

##### **Two homes tested, one remains**

At the Institute for Business & Home Safety's grand opening of its multi-risk building science research center, a conventional building and one meeting the IBHS Fortified standards were tested with hurricane-force winds on October 19, 2010.

[http://construction.com/video/?fr\\_story=f3c1bea3939433651686fb45d53ba03db793038f&rf=bm](http://construction.com/video/?fr_story=f3c1bea3939433651686fb45d53ba03db793038f&rf=bm)

(Storage technology and a negative attitude about pumped storage)

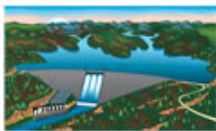
#### **'Hawaii is the guinea pig'**

By Alan Yonan Jr., staradvertiser.com, Oct 24, 2010

Hawaii's pursuit of energy independence has made the state a testing ground for technology to overcome the instability of wind and solar power generation. Hawaiian Electric Co., the state's largest utility, is leading the charge, investing in battery storage technology and honing its grid-management skills as it braces for a surge in the growth of renewable energy sources. A cloud passing over a photovoltaic panel or a sudden drop in wind at a wind farm presents challenges for any utility trying to maintain a flow of electricity through its grid at a constant frequency. That challenge becomes even more difficult on island grids, like those managed by HECO and the Kauai Island Utility Cooperative, where electricity cannot be brought in from a neighboring state to smooth out fluctuations. The world will be watching to learn from the successes and failures in Hawaii, experts say. "Hawaii is the unintended guinea pig for these technologies," said Sam Jaffe, an analyst at IDC Energy Insights, an energy industry consulting firm. Battery storage, although expensive, is emerging as the most practical solution to the problem, he said.

The growth of utility-scale wind projects and a surge in photovoltaic generation on thousands of rooftops of homes and businesses in Hawaii is unparalleled in any other state, according to Jaffe. "Just last year Hawaii emerged as the leader. And that will be even more true in the next few years," he added. Xtreme Power, an industry leader in battery storage for wind and solar energy products, has made Hawaii a testing ground for its technology, which it says is superior to lithium ion batteries when it comes to energy storage, efficiency, longevity and cost. Xtreme Power has been running a demonstration project for several years at First Wind's 30-megawatt Kaheawa Wind Farm on Maui. The technology proved successful, and Xtreme has landed contracts to supply battery backups at First Wind's 30-megawatt project in Kahuku, scheduled to start generating early next year, and the Kaheawa II project, scheduled to break ground next year. Although privately held Xtreme Power won't disclose pricing for its battery systems, the cost can be high, Jaffe said. At an estimated cost of \$1,000 per kilowatt, the 10-megawatt battery system planned for the Kahuku wind farm could cost as much as \$10 million, he said. The price is expected to come down as technology advances, he said, noting that automaker Nissan is targeting a battery cost of \$400 per kilowatt for its electric Leaf by 2012. Xtreme also is installing a battery at the state's largest solar farm, a 1.2-megawatt photovoltaic project developed by Castle & Cooke on Lanai capable of supplying 30 percent of the island's electricity. The system is currently running at half power because without a battery backup to smooth out the volatility of solar generation, the system would cause the grid on Lanai to crash. Lanai also has been targeted for a 200-megawatt wind farm that is still in the conceptual stage. The project, along with another 200-megawatt farm eyed for Molokai, would deliver electricity to Oahu via an undersea cable.

An Idaho-based energy company has proposed building a pumped-water-storage project on Lanai to help with energy storage issues should the wind farm ever be realized. The plan, advanced by Gridflex Energy LLC, would feature a reservoir on the western end of the island at an elevation of 1,790 feet to hold stored sea water pumped using electricity generated by the wind farm during hours when overall electricity use is low. The water would then be allowed to run downhill through a hydroelectric generator during hours of peak electricity demand. Castle & Cooke and HECO say concerns about cost and environmental impact make the project unlikely to advance. Meanwhile, HECO says it is using federal stimulus money to study the feasibility of integrating battery storage systems in its distribution networks to help stabilize the flow of electricity as it takes on more "distributed energy" from rooftop solar systems around the state. The utility also is working to improve its forecasting for wind and sunshine so it can be better prepared for the ebbs and flows from the renewable sources, said Scott Seu, HECO's vice president for energy resources. "We're trying to be more aggressive in our approach to renewables while at the same time being prudent."



## Dams:

### **Will dam break in earthquake?**

By Louis Short/ Co-Editor, The Sun-Times , thesuntimes.com, Oct 21, 2010

Heber Springs, Ark. — Greers Ferry Lake Dam and dikes are earthquake proof, according to the U.S. Army Corps of Engineers. It's not news that dozens upon dozens, and possibly hundreds, of earthquakes have rattled Faulkner and Cleburne Counties, and much of northern Arkansas, over the past several months. Little or no damage has been reported with the minor quakes. But what do all of those little trimmers add up to in the long run for Greers Ferry Dam? Not much. "There are two types of earthquake classifications to consider," said Bob Oberle, dam safety program manager for the U.S. Army Corps of Engineers in Little Rock. "There is the operating-basis earthquake (OBE) and the maximum credible earthquake (MCE). "Neither the dam nor the dikes

would sustain any damage with an OBE. There would not be a breach with the concrete dam or the earth dikes in the event of an MCE. There would possibly be damage, but not a breach." The OBE is what the area has been experiencing and is explained by the Corps as "the maximum vibratory ground motion that can be expected to occur at the site during the economic life of the project, usually 100 years". An MCE is a large earthquake and is described by the Corps as "the earthquake that would cause the most severe vibratory ground motion or foundation dislocation capable of being produced at the site under the currently known tectonic framework".



### Delaware sees success in taking out low-head dams

dispatch.com, October 19, 2010, By Gina Potthoff, THE COLUMBUS DISPATCH



You could paddle a canoe from downtown Delaware to Downtown Columbus, Ohio if the Ohio Environmental Protection Agency director had his way. The dream isn't entirely feasible, Chris Korleski acknowledges, because removing low-head dams and moving sewage lines that cross the Olentangy River is expensive, not to mention

the difficulty of getting a number of cities and state agencies behind the idea. The issue always comes down to: "How much does it cost, and who's going to pay for it?" Korleski said. But the city of Delaware has been embracing the idea and is reaping the environmental benefits of knocking down four dams in the past four years. Two more will be removed next year. The total cost is about \$310,000. It's a different story in Columbus.

The City Council will be asked this fall to approve an additional \$423,000 for a company to design the removal of the 5th Avenue dam; the total design cost is expected to be more than \$896,000. The money will cover a mussel survey, design, permits and others costs. Removing that one dam could cost \$5 million, city officials say. Removing the four additional Olentangy dams in Columbus and one in Worthington could cost \$100million. Taking out the dams is costlier because Columbus has sewer lines running through them and also wants to do more restoration at the sites, said Dax Blake, the city's sewerage administrator. Delaware officials and wildlife experts say the cost is worth it. In Delaware, fish species - including the silver shiner, stonecat madtom, banded darter and brindled madtom - are reappearing where a dam was removed in 2008. For the first time since the 1800s, the endangered purple wartyback mussel has been found downstream from where one dam stood until a month ago. Many insects and fish are swarming back along the now free-flowing streams, said Russ Gibson of the Ohio EPA's surface-water division. "When we remove these (dams), we're helping environment and people," Gibson said. "Why we put them in



in the first place is kind of hard to say." In Delaware, the Ohio EPA kicked in \$70,000, the U.S. EPA gave \$100,000, the Ohio Department of Transportation spent \$60,000, and the Ohio Department of Natural Resources and the city each spent \$40,000.

Columbus for years has wanted to remove the 5th Avenue dam to improve water quality and safety. Low-head dams can create death traps for anyone caught in the water churning around them. In June 2008, a 20-year-old man died after falling off a raft that went over the 5th Avenue dam. Removing the dam built in 1935 would improve water quality by speeding the river's flow and lowering its level to reveal 2 miles of riverbank. More than \$270,000 in U.S. and Ohio EPA grants have already gone to Stantec Consulting Services Inc., which is doing the 5th Avenue design. Laura Shinn, director of planning at Ohio State, said the university has volunteered \$150,000 toward preliminary design. Ohio State is waiting to hear more about how removal would affect its flood plain. "It comes down to: What are the impacts, and can we afford it?" she said. Anthony Sasson, freshwater conservation coordinator for the Ohio Nature Conservancy, said it's worth the expense. "Fifth Avenue is certainly an important one," Sasson said. "I think it's a safety hazard."



## Hydro

(We appreciate Secretary Chu's support for pumped storage hydro, but what the heck is he talking about when he says – "has not been seriously planned or looked at -- yet."??)

### **DOE Promotes Pumped Hydro as Option for Renewable Power Storage**

By JENNY MANDEL, nytimes.com, October 15, 2010

When the wind howls in Denmark and energy demand is low, turbine farms can store energy in a Norwegian reservoir for use the next day. But a hard wind in the dead of a Texas night has power companies paying customers to use electricity they don't need. That is a waste of clean power -- something that U.S. promoters of renewable energy want to change. Among the American boosters of pumped hydro storage is Energy Secretary Steven Chu, who maintains that water-based storage could help ease the integration of renewable power into the electrical grid. Using pumped hydro to store electricity costs less than \$100 per kilowatt-hour and is highly efficient, Chu told his energy advisory board during a recent meeting. By contrast, he said, using sodium ion flow batteries -- another option for storing large amounts of power -- would cost \$400 per kWh and have less than 1 percent of pumped hydro's capacity. "Yet in the United States," he said, "[pumped hydro] has not been seriously planned or looked at -- yet."

This is how pumped hydro storage works: Excess electricity is used to pump water uphill into a reservoir. When power is needed, water is released over a turbine to generate electricity. Water can either be used on a once-through basis and allowed to flow to a river, or it can cycle endlessly in a closed loop. There are about 40 U.S. pumped hydro facilities, most of which were built on the East Coast in the 1960s, '70s and '80s to complement nuclear plants that produced a steady stream of power around the clock, said Rick Miller, past president of the National Hydropower Association and a senior vice president with Omaha, Neb.-based hydropower consultancy HDR-DTA. The same principles that made pumped hydro a good choice for nuclear power plants make them good for renewable energy, Miller said. Consider how the technology is used to help both Denmark and Norway, he said. Windy Denmark is able to shift nighttime energy resources for daytime use, while Norway -- which gets almost all its electricity from conventional hydropower -- has reservoirs behind its dams that can easily store that excess power. The arrangement helps Norway mitigate some of the risk from drought and other challenges to its hydro-heavy grid, Miller said. For Norwegians, the system is a great money-maker as well. They pay their neighbor almost nothing for the nighttime wind energy they take on since demand is so

low at that time, but charge Denmark a premium for it at peak pricing hours. "Norway is making a killing," Miller said. "Danish people pay the highest power prices in Europe."

If U.S. utilities could add pumped hydro storage to the grid, they could potentially play both sides of that equation and save money overall by avoiding both the highs and lows of wholesale power pricing. In addition to the negative electricity prices sometimes seen in Texas, Miller said utilities in the Pacific Northwest sometimes pay people to take power thanks to quirks in conditions on the Columbia River. Conventional hydropower turbines on the river provide a large amount of electricity to the area's grid, Miller said, but several stakeholders on the river have a say in how they operate. There are no reservoirs to store water behind the dams there, so pumped hydro is not an option, and certain minimum and maximum amounts of water must continually flow over the dams to support fish populations in the river and to keep it navigable for watercraft. As a result, Miller said, Columbia River hydropower is a "must-run" resource that cannot be throttled down when electricity demand is low. Sometimes, the result is negative pricing. Miller said situations like these could increase as more utilities face renewable energy portfolio standards, mandates requiring that a certain percentage of electricity be generated using wind, solar and other renewable sources.

### **Environmental impacts**

Advocates say that closed-loop pumped hydro technology is easier on the environment than conventional hydropower projects. Those can drastically change water levels downstream, and if reservoirs are included, they often flood habitats above the dam as well. Boosters point to the Eagle Mountain project, a closed-loop system proposed for construction near Palm Springs, Calif., by Eagle Crest Energy Co., that is awaiting a permitting decision by the Federal Energy Regulatory Commission. Eagle Mountain is sited to take advantage of two abandoned iron ore quarries that would be connected with an underground tunnel. Water would be pumped to the higher quarry when power is plentiful and would drop over turbines to the lower one to generate an expected 1,300 megawatts of power, roughly enough to serve 1.3 million homes. Because the quarries are abandoned and the system would continuously recycle non-potable water, the project's environmental impacts are projected to be minimal and its cost low, planners say. With California under a state mandate to generate 33 percent of its power from renewables by 2020, Eagle Mountain could be a valuable resource for balancing the grid. The environmental group American Rivers has campaigned against conventional hydropower projects and for the removal of dams on rivers. But the group is not opposed to pumped hydro storage when built off-river in closed-loop systems, according to John Seebach, who runs the organization's Hydropower Reform Initiative. "Closed-loop systems have the promise of not causing the ecological harm to rivers that you see in traditional hydropower [and] traditional pumped storage projects," he said, provided it is done with appropriate environmental reviews and safeguards. "I don't think people are really talking about building new on-river projects. Once you move something on-river ... you're going to introduce a lot of harm," he added, pointing out that pumping water for an on-river system can require that the water flow backward -- wreaking havoc on the ecosystem.

### **'Certainty in pricing'**

The complication: While pumped hydro is technically simple, it is expensive to build. For a typical 1,000 megawatt facility, DOE estimates the cost at between \$1 billion and \$2 billion. That makes pumped hydro cheaper on a per-megawatt basis than any other large-scale storage option except for one, a strategy that stores compressed air in naturally occurring cave formations. But pumped storage, while flexible and relatively inexpensive, still costs too much for any but the biggest utilities to finance on their own. Today, pumped-hydro projects take five years to permit and five years to build, comparable to what is needed for a nuclear plant. A major hurdle for stored-hydro projects, according to the Hydropower Association's Miller, lies with regulations and pricing around the grid services that storage provides. "The industry understands the physics of it, but the markets don't have an ability today to monetize the benefits of pumped storage," he said. Grid services like load shifting and reliability are difficult to price into electricity rate structures. Regulated utilities do not have a good way to charge for them, and deregulated utilities have little

incentive to raise prices to fund capital-intensive projects that won't be completed for years. Energy regulators view pumped storage as a transmission tool, while the technology shows up on utility maps as an energy sink because it spools out slightly less energy than is fed into it. Many of the questions over how pumped hydro is priced come back to rules set by FERC. Miller said reworking those rules to recognize the contribution that storage makes would be the biggest help for the industry. "The industry is not looking for tax handouts; they're looking for certainty in pricing so they can get project financing," he said. But if storage technologies were to become eligible for an investment tax credit, or ITC, he said, pumped storage should be included. "An ITC alone is not going to be enough, alone, to get financing," he added. "But a more certain market, alone, would be enough to get financing." The regulation of carbon emissions would also help, Miller said. Without such regulations, utilities often opt to build new natural gas plants to add power that can be provided as needed to balance the less-than-steady supply from renewables. But it is unclear, Miller said, which option is cheaper long term for utilities, and the answer depends in part on the price of natural gas. A price on carbon, he said, would likely weigh in favor of hydropower.

### **DOE as a catalyst**

Energy Secretary Chu's stated interest in hydropower can help the technology move forward, but DOE's abilities there are limited. Jacques Beaudry-Losique, manager of DOE's Wind and Water Power Program, which includes hydropower, said the program convened a stakeholder workshop earlier this month in Washington, D.C., to help it put together a playbook, due out later this year. One thing slowing DOE down is that in 2006, its own hydropower program was shut down. Beaudry-Losique said that with budgets tight, it was argued that hydropower was already commercial, so it did not need a research program. Then about 18 months ago, the program was restarted, with storage technologies as a focus. **The budget for pumped storage is about \$2 million a year, Beaudry-Losique said, as compared with between \$15 million and \$20 million per year for the conventional hydropower program.** One request from participants at the recent workshop, according to Beaudry-Losique, was to get pumped hydro projects included in DOE's loan guarantee program. Discussions around that are under way. He said DOE can also play a "catalyst role" by working with FERC to address permitting and other regulatory issues. A DOE-funded study by the Electric Power Research Institute will examine what grid services pumped hydro provides, potentially contributing to structural market changes. FERC "Chairman [Jon] Wellinghoff has been very supportive of pumped hydro storage," Beaudry-Losique added. The department is also providing technical assistance to the industry. DOE is working with the Interior Department and the Army Corps of Engineers to publish a report on technical development, cost and site development models that could help project planners move faster, thus trimming cost. Beaudry-Losique said DOE can help shave a year off the permitting and a year off the construction phases. **The department is also assessing "every single stream in the country," he said, for conventional and pumped hydro storage.** As renewable portfolios are put in place, the need for power storage solutions will grow. "Now is about the time" to focus on it, Chu told his advisory board, "because when you're at 1 percent, 2 percent of the electric supply system you don't really care. But when you're at 10 percent, you care."

(I'm not sure how this invention works, but here it is for your amazement. The efficiency must not be too good!)

### **Small is beautiful in hydroelectric power plant design, and good for the environment**

**Invention could enable renewable power generation at thousands of unused sites**

eurekalert.org, 20-Oct-2010

Hydroelectric power is the oldest and the "greenest" source of renewable energy. In Germany, the potential would appear to be completely exploited, while large-scale projects in developing countries are eliciting strong criticism due to their major impact on the environment. Researchers at Technische Universitaet Muenchen (TUM) have developed a small-scale hydroelectric power plant that solves a number of problems at the same time: The construction is so simple, and

thereby cost-efficient, that the power generation system is capable of operating profitably in connection with even modest dam heights. Moreover, the system is concealed in a shaft, minimizing the impact on the landscape and waterways. There are thousands of locations in Europe where such power plants would be viable, in addition to regions throughout the world where hydroelectric power remains an untapped resource.

In Germany, hydroelectric power accounts for some three percent of the electricity consumed – a long-standing figure that was not expected to change in any significant way. After all, the good locations for hydroelectric power plants have long since been developed. In a number of newly industrialized nations, huge dams are being discussed that would flood settled landscapes and destroy ecosystems. In many underdeveloped countries, the funds and engineering know-how that would be necessary to bring hydroelectric power on line are not available. Smaller power stations entail considerable financial input and are also not without negative environmental impact. Until now, the use of hydroelectric power in connection with a relatively low dam height meant that part of the water had to be guided past the dam by way of a so-called bay-type power plant – a design with inherent disadvantages:



- The large size of the plant, which includes concrete construction for the diversion of water and a power house, involves high construction costs and destruction of natural riverside landscapes.
- Each plant is a custom-designed, one-off project. In order to achieve the optimal flow conditions at the power plant, the construction must be planned individually according to the dam height and the surrounding topography. How can an even flow of water to the turbines be achieved? How will the water be guided away from the turbines in its further course?
- Fish-passage facilities need to be provided to help fish bypass the power station. In many instances, their downstream passage does not succeed as the current forces them in the direction of the power plant. Larger fish are pressed against the rakes protecting the intake of the power plant, while smaller fish can be injured by the turbine.

A solution to all of these problems has now been demonstrated, in the small-scale hydroelectric power plant developed as a model by a team headed by Prof. Peter Rutschmann and Dipl.-Ing. Albert Sepp at the Oskar von Miller-Institut, the TUM research institution for hydraulic and water resources engineering. Their approach incurs very little impact on the landscape. Only a small transformer station is visible on the banks of the river. In place of a large power station building on the riverside, a shaft dug into the riverbed in front of the dam conceals most of the power generation



system. The water flows into a box-shaped construction, drives the turbine, and is guided back into the river underneath the dam. This solution has become practical due to the fact that several manufacturers have developed generators that are capable of underwater operation – thereby dispensing with the need for a riverbank power house. The TUM researchers still had additional problems to solve: how to prevent undesirable vortex formation where water suddenly flows downward; and how to best protect the fish. Rutschmann and Sepp solved two problems with a single solution – by providing a gate in the dam above the power plant shaft. In this way, enough

water flows through to enable fish to pass. At the same time, the flow inhibits vortex formation that would reduce the plant's efficiency and increase wear and tear on the turbine. The core of the concept is not optimizing efficiency, however, but optimizing cost: Standardized pre-fabricated modules should make it possible to order a "power plant kit" just like ordering from a catalog. "We assume that the costs are between 30 and 50 percent lower by comparison with a bay-type hydropower plant," Peter Rutschmann says. The shaft power plant is capable of operating economically given a low "head" of water of only one to two meters, while a bay-type power plant requires at least twice this head of water. Series production could offer an additional advantage: In the case of wider bodies of water, several shafts could be dug next to each other – also at different points in time, as determined by demand and available financing.

Investors can now consider locations for the utilization of hydropower that had hardly been interesting before. This potential has gained special significance in light of the EU Water Framework Directive. The directive stipulates that fish obstacles are to be removed even in smaller rivers. In Bavaria alone, there are several thousand existing transverse structures, such as weirs, that will have to be converted, many of which also meet the prerequisites for shaft power plants. Construction of thousands of fish ladders would not only cost billions but would also load the atmosphere with tons of climate-altering greenhouse gas emissions. If in the process shaft power plants with fish gates and additional upstream fish ladders were installed, investors could shoulder the costs and ensure the generation of climate-friendly energy over the long term – providing enough power for smaller communities from small, neighborhood hydroelectric plants. Shaft power plants could also play a significant role in developing countries. "Major portions of the world's population have no access to electricity at all," Rutschmann notes. "Distributed, local power generation by lower-cost, easy-to-operate, low-maintenance power plants is the only solution. For cases in which turbines are not financially feasible, Rutschmann has already come up with an alternative: "It would be possible to use a cheap submersible pump and run it in reverse – something that also works in our power plant."



## Water:

(This is getting very serious)

### **Drought sends Lake Mead to lowest level since 1937**

10-19-10, usatoday.com

LAS VEGAS (AP) — The drought has sent Lake Mead to a low not seen in a lifetime. The Las Vegas Review-Journal says the reservoir on the Colorado River hasn't been down so low since 1937, when it was being filled for the first time behind the newly completed Hoover Dam. Since drought took hold on the Colorado and its tributaries in 1999, the surface of the lake has plunged almost 130 feet. If the lake drops another eight feet, federal officials will declare a shortage on the river, an unprecedented move that would cut Arizona and Nevada's river share. Southern Nevada Water Authority General Manager Pat Mulroy says forecasters are predicting dry conditions during the next two winters in the mountains that feed the Colorado.



## Environment:

## SENTINEL EDITORIAL: The competing environmental aspects of dams

sentinelsource.com, October 17, 2010

Anyone who assumes that all environmentalists think alike about everything would do well to consider the subject of dams. In recent weeks, the Homestead Woolen Mill Dam in West Swanzey, which began harnessing the power of the Ashuelot River more than a century-and-a-half ago, was intentionally demolished. Coincidentally, on the other side of the country in the Olympic National Park in Washington state, heavy excavators launched into the biggest dam removal project in U.S. history — the dismantling of the 100 foot-high Elwha River dam. The two projects, different in size and cost, were driven by some similar aims — principally to return the blocked waterways to their natural, wild conditions and reopen their channels to fish migration. An added influence, certainly in the case of the West Swanzey dam, was the cost of maintaining structures that have outgrown their economic use. That's a factor that concerns yet another dam — the one in the Ashuelot River Park in Keene that was built in the 19th century to power the textile-making machines of the Faulkner and Colony Mill. City officials are looking into removing that structure.

Consider the environmental prospect if the Ashuelot Park dam were to be taken apart and changes were made to other small dams well down river in Hinsdale: New aquatic life would return to Keene, and existing fish species would be protected. But are dams nothing more than fish barriers? Gerard DeMuro says there's more. The Acworth man is president of the Society for the Preservation of Old Mills and the related Northern Heritage Mills, Inc., and he values dams for the purpose for which most of them were built — to provide power. As such, he laments the dam removal enthusiasm that first surfaced in earnest in New Hampshire nine years ago when the McGoldrick Dam on the Ashuelot River in Hinsdale was taken down. The McGoldrick dam was one of 3,300 dams in the state, some of them comparatively tiny structures that one can still happen upon while walking by a forest stream — structures that at one time produced power for mills. The heritage isn't lost on DeMuro. He says, "We have thousands of oil wells in New Hampshire; they just happen to look like old mill sites."

Next Friday, DeMuro's nonprofit organization will team up with River Valley Community College for a conference about renewable energy and historic preservation. The event will include tours of old mill sites and instruction about small-scale hydro power, and may lead to new, productive incarnations for some small dams. There are limits to the potential of small-scale hydro — Bob King, a Keene man who owns two small hydro-power dams on the lower Ashuelot River, says that the nation's most potent energy solution involves reducing demand, not finding new energy sources. But hydro has appeal, especially when it draws on our history. The benefits may not always outweigh other environmental gains, but DeMuro ought to be thanked for showing how our early reliance on dams for energy can be relevant and practical today.

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(Lake Billy Chinook – always knew it as the Round Butte Dam)

### Spawning Traffic Restored in Hydropower Rivers

Featured In: Chem.Insider Daily, October 18, 2010, chem.info

Looking down from the Cascade Mountains at the three majestic rivers rambling through the picturesque countryside in central Oregon, no one would ever suspect that the salmon and steelhead were swimming their way up those rivers for the first time since 1968. Although a series of dams, built in the early 1960's, created a dynamic resource for hydropower, the fish passage system built into the design proved unsuccessful for the fish to find their way downstream for migration. Through a unique partnership, the co-owners of the dams, Portland General Electric (PGE) and the Confederated Tribes of Warm Springs, spent several years developing a plan to improve the habitat for the fish. The Barnard



Construction Company and a team of engineers from CH2M Hill were commissioned by PGE and the tribes to design a system that would allow fish to be redirected for successful spawning migration without disrupting the source of green energy from the dams. The unique solution involved constructing a 273-foot underwater tower and floating bridge from the floor of Lake Billy Chinook above the Round Butte Dam.

This massive structure's one-of-a-kind design modified the current and temperature to mimic the natural conditions of the river for successful fish collection while maintaining water flow for power generation.

With the new collection station, the fish are efficiently transported downstream so they can continue on to the Columbia River and out to the ocean. A key element of this project was determining a design for equalizing/dampening connectors that would join the floating apparatus with the stationary structure. These arrestors had to allow a full range of motion but provide predictable stability that could absorb storm forces and withstand seismic pressure. After an extensive search, the engineers found Kastalon Polyurethane Product's long-standing reputation for engineered to fit solutions to be a good choice to partner in the design and development of these unique polyurethane arrestor connectors. Kastalon, a second generation family-owned business located outside of Chicago, accepted the challenge of providing a unique design and chemistry of polyurethane with the mechanical and physical properties that would give the strength and life expectancy the project required. Today, after nearly two years of design, testing, and construction, the massive underwater tower and fish collection station rises from the floor of Lake Billy Chinook. For the first time since 1968 the migratory cycle for the fish has been restored without disturbing the hydropower being provided to the region. With improved habitat and downstream passage, the juvenile Chinook salmon and steelhead can now return to their native spawning grounds and complete their natural cycle.

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