

2/17/2017



Some Dam – Hydro News™ And Other Stuff



Quote of Note: “Energy and persistence conquer all things.” - - Benjamin Franklin

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“Good wine is a necessity of life.” - -Thomas Jefferson
Ron’s wine pick of the week: 2014 Carol Shelton US Red Blend “Karma Reserve”
“No nation was ever drunk when wine was cheap.” - - Thomas Jefferson



Dams:

(Sometimes if a dam has no useful purpose, dam removal can be a good thing.)

Dam Removal: Often the Smartest, Safest Investment

By Megan Lawson | February 2, 2017, morningconsult.com

Last November, a century-old dam on Kentucky’s Green River partially failed. While fortunately not posing safety risks, the partial failure freed eight river miles through Mammoth Cave National Park. The dam long had been targeted for removal, so the surprise failure may be a blessing in the long run. But a gentle, risk-free slide from obsolete to failing is not likely with our nation’s other aging dams. **Decrepit, unsafe dams often no longer provide economic benefits and are more expensive to maintain than they are worth — while also threatening communities across the country.** Removing obsolete dams could be a popular and smart cornerstone of the new



Administration’s wide-ranging infrastructure improvement program. **Nationally, more than two**

million dams exist to control flooding, irrigate crops, provide community water supplies, and produce hydropower. Many continue to function well and provide vital services to communities and industries.

Many dams, however, have outlived their original purpose and no longer power mills, provide water for agriculture, or produce cost-effective power for nearby towns. Today the average U.S. dam is more than 50 years old. As this infrastructure ages, deterioration, maintenance requirements, and repair costs accelerate. Rehabilitation of a typical non-federal dam today ranges from \$100,000 to millions of dollars. In many cases, it may be less expensive to simply remove a dam, particularly when it is providing minimal benefits. Concerns about dam safety also are growing as this infrastructure deteriorates. As of 2013, the Federal Emergency Management Agency reported that 10,856 state-regulated dams across all 50 states were rated as High Hazard Potential, indicating that failure would likely cause loss of life. According to a 2016 report by Headwaters Economics, the costs of removing certain dams may be far outweighed by the benefits:

- Removing deteriorating dams improves public safety. In many cases, residential and business areas have grown up around dams originally built in outlying areas. The consequences of dam failure are much higher today.
- Dam removal creates jobs – not only the engineering and construction jobs required to carefully take apart and remove the structure, but longer-term jobs in environmental engineering and river restoration. Removal of the Elwha and Glines Canyon Dams in Washington State in 2012 created an estimated 760 new jobs and contributed \$33 million to personal income in the region.
- Many dams block fish access to historical spawning grounds and habitats. Removal often results in the return of recreationally and commercially important fish such as salmon and steelhead in Washington and river herring and alewife in Maine. Improved fisheries and catch rates yield increased revenue for local economies.
- Removing dams can improve watershed ecosystems. After dam removal, researchers have documented more robust plants and animals in upper watersheds and estuaries, improved water quality, and increased numbers and diversity of fish.
- Dam removal projects can attract new investments and spark outdoor recreation. Sections of Maine's Penobscot River have become boating destinations and attracted new tourism dollars since removal of two dams in 2012 and 2013.
- Communities downstream from deteriorating dams can avoid massive cleanup costs by prudent removal of obsolete dams before they fail. In 1972, the failure of South Dakota's Canyon Lake Dam destroyed 1,335 homes, and cost more than \$60 million in damages.
- Removal of inefficient and deteriorating hydropower dams saves ratepayers money.

Electricity produced by the Edwards Dam in Maine cost four to five times the market rate when the dam was removed in 1999. Aging infrastructure is a high priority of the new administration. Identifying and removing obsolete dams while providing local jobs and increased recreation in communities adjacent to our nation's bountiful rivers and streams is a win-win proposition. *Megan Lawson is an economist with Headwaters Economics in Bozeman, Mont.*

(The CA water battle keeps rolling.)

Peter Van Zant: There are alternatives to the Centennial Dam

theunion.com, February 2, 2017

I attended the Alternatives to the Centennial Dam Workshop at the Wild and Scenic Film Festival. Centennial is the dam on the Bear River proposed by Nevada Irrigation District (NID). The speakers were Jonas Minton, senior water policy advisor at the Planning and Conservation League; Dr. Sarah Yarnell, associate project scientist at the UC Davis Center for Watershed Sciences; and Jeffrey Odefey, director of Clean Water Supplies Program at American Rivers.

The Centennial Dam proposed by NID would be a 110,000-acre-foot reservoir with a 275-foot tall dam on the Bear River. It would inundate the last six miles of publicly accessible, free-flowing river on the Bear, covering the Bear River Campground, more than 25 homes and 120 parcels, 140 Native American sacred cultural sites, and Dog Bar Bridge. The stated purpose of the dam is to address changes in climate and the probable reduction in snowpack storage in the upper Yuba River watershed.



Three themes emerged regarding alternatives to the dam: 1. building a dam creates financial uncertainty and requires state intervention in NID's water use; 2. implementing industry standard water management strategies could achieve most or all of NID's water supply needs; 3. the Yuba and Bear river watersheds can be made more resilient to climate uncertainty with well-known restoration and management strategies. The Association of California Water Agencies (ACWA), of which NID is an active member, reinforces these concepts in its "ACWA Policy Principles on Water Conservation and Water Use Efficiency".

"I came away from the workshop with a timely reminder of the choices and strategies available to us that can provide multiple benefits throughout our watershed in addition to water supply reliability."

Jonas Minton addressed the expense of new dams confirming the American River Watershed Institute projection of \$1.2 billion presented to the NID Board on Jan 11, 2017. Minton emphasized that droughts are an inevitable part of California's climate and increased cost of water is also inevitable. He added that the ultimate survival and health of the Bay-Delta ecosystem requires water from upland watersheds. Ms. Yarnell reviewed climate change impacts including increased temperatures, snowfall starting later and ending earlier, more variation in snowmelt timing, larger floods, and longer dry seasons. She proposed improving watershed health by maintaining biodiversity, minimizing stressors, restoring meadows and forests, preserving natural flows in rivers, thus extending spring flows into summer. Yarnell concluded that, "meadows are a key source of groundwater supply to stream base flow."

Although any given meadow restoration would make only a small contribution, there are about 300 meadows within the Yuba and Bear River watersheds that, in sum, could substantially contribute to water supply reliability. She discussed how responsible forest thinning increases water storage, reduces loss from transpiration, and reduces the consequences of wildfires and limiting development in watersheds preserves meadows and prevents runoff from impervious surfaces that increase flood risk. Yarnell reviewed the recently passed AB 2480 that identifies healthy meadows and forests as watershed "infrastructure" eligible for state funding.

Mr. Odefey described dams as inflexible and expensive investments in the face of future climate uncertainty, whereas investments in water system efficiency and consumer conservation guarantee a return regardless of future climate conditions. Odefey addressed the relatively high consumption rates of NID users because of a lack of information and aggressive incentives to conserve. Where the California average gallons-per-customer-per-day (GPCD) is 133 gallons, NID customers use 246 GPCD! He projects that "at least a 33 percent permanent reduction is possible" by decreasing residential use, fixing system leaks, and increasing system efficiency. He discussed agricultural water use, NID's largest use category, which is not precisely measured or audited for true agricultural use resulting in valuable commercial agricultural water being used for

large-scale residential landscaping. Appropriate use and pricing could improve supplies and support our valuable commercial agriculture.

Caleb Dardick, SYRCL executive director, closed the workshop by raising the challenge for citizens and NID to work together to investigate and design our water future. He suggested the community learn about best practices and alternatives available before committing to a costly, risky, and environmentally harmful dam. I came away from the workshop with a timely reminder of the choices and strategies available to us that can provide multiple benefits throughout our watershed in addition to water supply reliability. The Centennial Dam project is financially risky given our uncertain climate future. The financial risk rests with us, the NID tax and rate payers, and potentially state and federal tax payers who help fund it. Can NID lead us toward a water-wise future that minimizes financial uncertainty creating a model for California? What is the purpose of the project if there is a better way forward? *Peter Van Zant, a former Nevada County Supervisor, Sierra conservationist and SYRCL volunteer, lives in Nevada City, CA.*

(False alarm.)

MVSD chairman cites two studies, dam inspection and engineers for new opinion of dam's safety

2/3/17 @ 12:00, Staff report, vindy.com

MINERAL RIDGE, Ohio - Atty. Matt Blair, chairman of the Mahoning Valley Sanitary District board of directors, who raised red flags about cracks in MVSD buildings and Meander Dam, has reversed course, saying the cracks in the dam poses no danger to the public. On Thursday, Blair cited multiple sources – a final engineering report released Monday, a preliminary engineering report released Wednesday, a recent Ohio Department of Natural Resources inspection of the dam and the opinion of MVSD engineers – that indicate the dam is “completely safe.” Blair said he was not prepared to release the most recent report from Gannett Fleming, a



Harrisburg, Pa., engineering company, until the next MVSD meeting, which is not yet scheduled. Blair wrote several letters last summer to the ODNR and U.S. Environmental Protection Agency asking for help in determining whether “ground shifting” is occurring near the Meander facilities that would explain cracking in the dam and MVSD buildings, especially since Niles was in the midst of a record-breaking year in 2016 for waterline breaks.

A Vindicator review of an engineering report dated Monday from Gannett Fleming doesn't specifically address the dam's integrity. “The cracks in the top of dam roadway may have developed due to heavy equipment traveling over the slab with wheel alignment near the edges,” the report says. The only recommendation given for addressing the dam cracks is that, “Replacement of the top of dam roadway is included as a feature in the upcoming design and construction of dam modifications project.” Blair has discussed the dam- modification project as an estimated \$28 million upgrade to the 90-year-old dam to ensure that it is able to continue to function well into the future. The study Gannett Fleming released Monday at a cost of \$9,922 was supposed to include an inspection of the top of the dam, emergency spillway structures and gatehouse but not include a “detailed inspection, measurements, or survey and mapping of cracks,” according to an October 2016 letter. Gannett Fleming is conducting another study at a cost of \$396,000 that involves soil borings to explore what is below the dam's surface. Gannett Fleming provided the MVSD with a preliminary report based on that study Wednesday.

(Guess it's too old, but it is picturesque.)

Owner: Lake Conestee dam must be replaced to prevent catastrophe

The 125-year-old stone masonry dam that holds in place up to 2.8 million tons of toxic sediment in Lake Conestee Nature Park, NC poses a serious environmental and economic threat if it were to fail, a catastrophe that would affect water supplies, destroy riverfront properties and cost hundreds of millions of dollars to clean up, said the dam's owner.



Lake Conestee, located on the Reedy River just south of the city of Greenville near Mauldin, acts as a receptor of chemicals that flowed downstream for decades as part of Greenville's industrial legacy, especially in the era before the Clean Water Act restricted the types of waste that could be discharged into the river. Over time, the waste mixed in with sediment that washed downstream until it settled behind the Lake Conestee dam and filled in much of Lake Conestee. And there the contaminants sit, a threat just below the surface, upstream from more than 250 riverfront homes in Greenville County and within striking distance of Lake Greenwood, the main drinking water source for the city of Greenwood.

(Better control.)

\$900M Folsom Dam spillway project nearing completion

Project within budget, likely to finish by October

By: Mackenzie Myers, Feb 05 2017, thepresstribune.com

The Folsom Dam auxiliary spillway project is in its last phase and on schedule to finish by October, according to the U.S. Army Corps of Engineers, Sacramento District. The \$900 million structure, which runs parallel to Folsom Lake Crossing, has been in construction since 2008 and is a joint project between several federal and state agencies: the U.S. Army Corps of Engineers, U.S. Bureau of Reclamation, State of California and Sacramento Area Flood Control Agency. The Corps of Engineers built the dam, while the Bureau of Reclamation excavated the spillway chute and will operate the dam when it is finished. "The majority of construction work is coming to completion," said Corps of Engineers project manager Kristine Des Champs. "There's still some remaining restoration work that the Corps will be working on, and we're also working on commissioning the structure."



Each of these six spillway gates are 50 feet lower than those of the main dam, allowing water to be released earlier in the event of heavy rains.

The spillway project was split into five phases. Phase four ended in December, and the final phase involves removing equipment routes and restoring natural drainage to the area. Commissioning the structure will require running a series of tests to make sure the spillway is capable of handling its capacity of 312,000 cubic feet per second. "That's equivalent to four Olympic-size swimming pools per second," Army Corps spokesman Rick Brown said. Brown said that there have been questions about whether the new spillway could be used now, in light of all the rain the area has received. He said the project needs to be tested first under controlled

conditions, and since multiple agencies have been working on the spillway, the Corps of Engineers cannot make the final call on running it early.

The spillway project consists of three main pieces: an approach channel within Folsom Lake, a six-gate control structure and a 3,027-foot long spillway chute and stilling basin, which is intended to slow water down to safe speeds before it re-enters the river. Des Champs said though the elevation of the spillway is the same as the main dam, the new spillway's gates are 50 feet lower than those of the dam proper. "Essentially what this project does is allow for safer releases ahead of a storm coming in," Des Champs said. Brown added that the project helps prevent water spilling over the main dam if the lake gets too full. Des Champs said the spillway will help both federal agencies meet their goals. The Corps of Engineers is aiming to reduce flood damage in the area, while the Bureau of Reclamation is working on dam safety. "This project accomplishes both of those missions because we're able to release water sooner out of the auxiliary spillway," she said. According to an email from Todd Plain, a spokesman for the Bureau of Reclamation, reservoir releases are typically administered to manage flood conditions, satisfy regulations and ensure adequate water supply for both people and wildlife.

(Long article about possible dam removal.)

Watertown Dam could be next to go along Charles River

By Dana Forsythe, Feb 6, 2017, wickedlocal.com

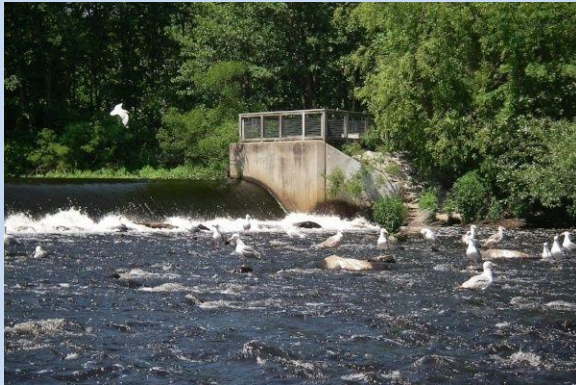
There's been a dam on the Charles River just upriver from Watertown Center almost as long as there's been a Watertown, but it could soon be removed to improve the environment and reduce the risk of flooding upriver from the dam. According to Charles River Watershed Association spokesperson Alexandra Ash, the Watertown Dam, originally built in 1632, has "significant hazard potential," meaning a failure in the dam may cause loss of life and damage homes, industrial or commercial facilities or roads in Watertown and beyond.

According to the CRWA, removing the Watertown Dam would restore the free flow of water and sediment and allow fish and other wildlife to travel between portions of the river and can help migratory fish populations rebound. Removing a dam eliminates expensive maintenance costs and removes the risk of people being injured around a deteriorating dam.

The Massachusetts Department of Conservation and Recreation's Office of Dam Safety has rated three of the dams on the Charles as having high hazard potential, eleven of the dams as having significant hazard potential, and five of the dams as having low hazard potential. There are currently 109 dams in the Charles River watershed, 23 of which are on the Charles River. 13 of the dams on the Charles are owned by the state, three are owned by local towns and cities, one is owned by the U.S. Army Corps of Engineers, and six are privately owned.

Dam harms environment, say experts

Currently, while some Charles River dams provide flood control, many of the dams on the Charles River bring more problems than benefits. Built to generate power for industry in the 18th and 19th centuries, dams served an



What's the issue?

State officials are examining whether or not to remove the Watertown Dam on the Charles River.

Why is this important?

Dams prevent river herring, including the American shad, from migrating upstream to lay their eggs. Fish ladders installed at some dams help fish swim upstream, but each dam makes the trip more difficult, and some fish never make it to their spawning grounds. Dams also alter water clarity and chemistry, upon which the reproductive cues and behaviors of many fish species are based. Dams contributed to the decline of migratory fish populations in the Charles River and are hindering their populations from becoming re-established, especially the American shad. Dams create stagnant water, which is susceptible to temperature increases and loss of oxygen, harming wildlife.

important role in the history of the Charles River watershed. However, dams slowed the flow of the Charles River, hampering its ability to filter out bacteria and clean itself. In some cases, according to the CRWA, dams also prevented migratory river herring from reaching upstream reaches of the river to spawn.

According to CRWA scientist Elisabeth Cianciola, in a preliminary evaluation of management options for the Watertown Dam in 2011, Stantec Consulting Services, Inc. determined that river flow is impacted for approximately one mile upstream of the dam, around the location of the Bridge Street bridge. "The reduced movement of water upstream of the dam allows water temperatures to reach higher levels than we would expect to see if the river flowed unobstructed, creates an environment that is conducive to the growth of invasive aquatic plants, and has allowed sediment to accumulate behind the dam," she said. "With dam removal, Cianciola said, water and sediment would be able to continually move through the project area as they would naturally, which could reduce flood risk upstream of the dam." Fish such as alewife, blue-back herring, and American shad would be able to access spawning grounds upstream of the existing dam and less vulnerable to being eaten by gulls that visit the dam. Additionally, canoeists and kayakers would also be able to boat from the Charles River Dam in Boston to the remnants of the Bleachery Dam in Waltham without having to carry their craft around the dam. "It would be reasonable to expect that because water would no longer pond behind the dam structure, the width of the river upstream of the dam would decrease," she said. "The elevation of groundwater on the existing riverbank areas would likely decrease, making them drier, and consequently, it may be necessary to vegetate the newly-exposed ground in the existing river bed with wetland plants in order to avoid a loss of wetlands in the project area."

Feasibility study planned

According to the Charles River Watershed Association, the Massachusetts Division of Ecological Restoration, CRWA and Department of Conservation and Recreation will be conducting a feasibility study this year that will assess the possible removal of the Watertown Dam. In December 2016, the Watertown Dam was added to the list of designated priority projects of the Division of Ecological Restoration at CRWA's recommendation. The feasibility study will look at costs and benefits of removing the dam and will also consider alternatives to removing the dam. Cianciola said the timeline for the feasibility study would depend on the funding structure that DER and DCR decide to use for the project. "If the feasibility study, hydrologic analysis, and design are funded as a single project, the feasibility study likely would not start for another six months or so while we line up funding for the project," she said.

Potential pollution, urban site pose challenges

In 1918 and then again in 1955 the Watertown was severely damaged by flooding and a hurricane, respectively. It wasn't until 1962, when the Mass Dept. of Conservation built a new dam in the spot as part of a flood control project. The dam hasn't been updated since 1972, when a new fish ladder was put in. As for possible challenges associated with the project relate to the urban nature of the site, Cianciola said turning the Watertown Dam into an active construction site would likely have temporary impacts on access to the Charles River Greenway paths on either side of the river and the existing pedestrian bridge. "Because a dam has existed at this site since the late 1700's, the sediment that has accumulated behind the dam may contain pollutants that were dumped into the river before environmental regulations existed," she said. "It would be necessary to determine whether any of the accumulated sediment needs to be dredged from the river, and, if so, where and how the sediment will be contained or disposed." In December of last year, the first of these dam removal projects started in Bellingham as workers began to take down the Old Mill Dam. According the CRWA, officials currently anticipate that the dam removal and dredging will be largely completed by February, with additional site stabilization and planting to be performed in the spring of 2017.

(Dam removal is rising.)

Boardman Dam Removal Set For Spring

By Beth Milligan, February 7, 2017, traverseticker.com

Another major phase of the Boardman River Dams Project, MI is ready to get underway as crews prepare for the estimated \$8 million removal of the Boardman Dam and old Cass Road bridge this spring.

Carl Platz, project manager with the U.S. Army Corps of Engineers, says the group is finishing reviewing bids for the project this week. “We’re anticipating awarding a contract at the end of this week or early next week,” he says. While the project’s final budget and construction timeline will be determined by the contract, Platz says previous estimates of \$8 million should be



“on target.” The majority of project funding is coming from federal funding, with a small handful of grants and local funds making up the rest, says Platz.

According to Implementation Team Chairman Frank Dituri, work could begin as soon as early spring. “The most recent update is that the project should be completed by the end of September or October,” he says. Phase Two, as this stage of the Boardman River Dams Project is called, will complete work that began in 2016 with the \$3 million construction of the new two-lane Cass Road bridge. That bridge is still connected to the old one-lane river crossing atop the Boardman Dam that connects Cass Road to Keystone Road. For 2017, planned work includes rerouting the Boardman River to flow under the new bridge, deconstructing and removing the Boardman Dam and old bridge, and restoring the missing roadway so that Cass Road maintains two lanes of traffic all the way to Keystone.

“Since we already had Cass Road closed last year, we modified the intersection at Cass and Keystone at that time, changing out the signals and widening the road so there was more room for (vehicle) stacking,” says Grand Traverse County Road Commission Manager Jim Cook. “We did that so the intersection would be ready and so we didn’t prolong the impact of the 2017 project. We wanted to get the road back open as soon as possible this year.”

The project will still require Cass Road to be closed again for a significant period of time, however – likely for the entire summer, and possibly longer. “In terms of inconvenience for the local population that uses Cass, it’ll be similar to 2016,” says Cook. While officials tried to time the closure this year to avoid impacting Traverse City Area Public Schools as much as possible, work could still “impact some portion of the spring or fall,” Cook says.

When the project is finished, however, traffic capacity on Cass will be nearly tripled. “On the old bridge, we averaged 5,500 cars a day,” says Cook. “The new bridge will accommodate 14,000 or 15,000 cars a day. So it’ll be a huge improvement once we can get that old bridge out.”

Project engineers have also taken pains to avoid any drawdown disasters like the one that occurred during the removal of the Brown Bridge Dam in 2012, when the failure of a drawdown structure resulted in the flooding of 66 properties along the Boardman River. AECOM Project Engineer Dan DeVaux says the Brown Bridge project – which was overseen by two different firms, AMEC Engineering and Molon Excavating – relied on a temporary dewatering structure next to the dam that failed. “When it failed, there wasn’t any stop gap or failsafe for it,” DeVaux explains.

For the Boardman Dam, crews will instead use a bypass dewatering system, which diverts water over the dam gradually in a series of pipes. Once water levels are at a safe elevation, the dam will be excavated. In a worst-case scenario – a total failure of the system or a deluging rain event –

Keystone Pond would simply fill back up, says DeVau, requiring the drawdown process to begin again. "The worst-case scenario is really a delay in time," he says. While Phase Two gets fully underway this year, project team managers will also be looking ahead to Phase Three: the removal of Sabin Dam in 2018. The design phase for that project is 60 percent complete now, according to Platz, with bids likely going out in late 2017. In a January 23 memo, the Army Corps announced that the planned route for the restored Boardman River channel near the Sabin Dam is being relocated 150 feet west to "provide a more stable alignment." While a small shift geographically, the new river route now goes "exactly where the powerhouse is," says Platz, requiring its removal.

That news will likely be welcomed by local officials, who hoped to see the powerhouse removed to eliminate upkeep and maintenance costs but were initially told by the Army Corps its removal wasn't necessary to the project's success. Instead of Phase Three's early estimated price tag of \$2.7 million, removing Sabin Dam – including the powerhouse – will likely now cost between \$4.2 and \$4.4 million, according to Platz. However, with the Great Lakes Fishery Commission stepping in to help with the final phase of the dams project – future modifications at Union Street Dam – federal Army Corps funding assigned to that phase can now be used at Sabin instead. The budgets will essentially "balance out," says Platz. Of the up to \$4.4 million cost for the Sabin project, an estimated third of the funding – in the neighborhood of \$1.5 million – will come from local sources, he says. The rest will be covered by federal funds. When finished, the Boardman River Dams Project is expected to reconnect more than 160 miles of "blue ribbon" stream and reestablish the cold-water aquatic ecosystem of the river.

(The pro dam folks are circling the wagons.)

Support the Columbia River Dams

By Oregon Farm Bureau, February 7, 2017, naturalresourceport.com



The U.S. Army Corps of Engineers, the Bureau of Reclamation, and the Bonneville Power Administration are planning to make changes to the Columbia River System operations. The Columbia River System consists of 14 different federal projects in the Columbia Basin, including the Columbia River dams. When completed, the plan will contain a range of management alternatives to the Columbia River System that could greatly impact the

viability of agriculture within the Pacific Northwest. As part of the planning process, the agencies are soliciting public comment from stakeholders so that they can identify the important economic and social values of the Columbia River System.

It is imperative that agriculture make its voice heard in this process. The agencies need to hear from irrigators in the Columbia Basin, and farmers across the state, about how the Columbia River System and various federal projects in the Basin benefit Oregon's agricultural economy. Whether it be the navigation, irrigation, or energy benefits the dams bring, the operation of the dams are critical to Oregon Ag.

(The dam removal advocates are going to the top too.)

Dam opponents send letter to Trump seeking dam removal

The Associated Press, newsobserver.com, Feb. 8, 2017

SPOKANE, Wash. - More than 50 fishing companies and environmental groups are asking President Donald Trump to take a fresh look at removing four dams on the lower Snake River to help restore wild salmon runs. The group sent a letter to the White House this week saying the dams must be removed to save wild salmon and steelhead runs. Supporters of the dams say they produce many benefits for the region, including electricity and barge shipping for



Lower Monumental dam

commodities like wheat. But fish advocates blame the dams for decimating salmon runs and have called for years for removal of Ice Harbor, Lower Granite, Little Goose and Lower Monumental dams.

(No dam failure is good.)

Dam Breaks in Elko County

ktvn.com, February 8, 2017

Local law enforcement says Twentyone Mile Dam in northeastern Elko County, NV broke at about 3 pm on Wednesday.

According to NWS, there is a flash flood warning for the dam break that is in effect until 6 pm on Wednesday for east central Elko County.

Officials say that at about 3:06 pm on Wednesday, February 8, they confirmed the failure of Twentyone Mile Dam already impacting the Gamble Ranch and flooding several buildings.

They say that although the water has slowed, it is still steadily moving toward Dake Reservoir which has the potential to go over the top and could result in additional flooding downstream. Public and Law Enforcement say there has been significant flash flooding in Montello and the water is continuing to rise, possibly impacting State Route 233, which is already closed.

They say that residents living in or near Montello and downstream of Twentyone Mile Dam and Thousand Springs Creek should take immediate action to protect life and property.

Elko County Sheriff Jim Pitts says there is a direct line into the sheriff's office for sandbags and for non-emergency calls, the number is 777-2520. Officials say if anyone is available to volunteer to help fill sandbags, they should also call the non-emergency number.



Hydro:

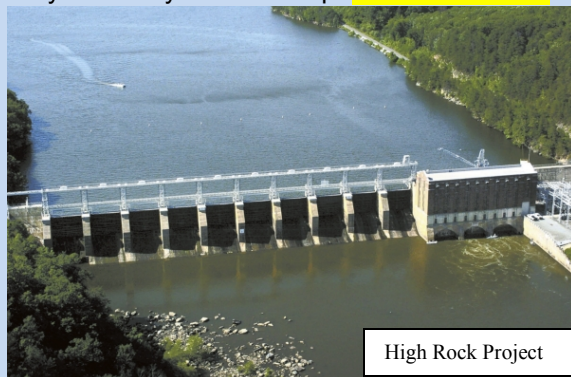
(New owner, same projects.)

Alcoa completes sale of 4 NC dams to Cube Hydro

wbtv.com, 2/4/17

BADIN, N.C. (AP) - A Maryland company is completing its purchase of four North Carolina hydroelectric dams from Alcoa Inc., which ends nearly a century of ownership. Alcoa and Cube Hydro Partners of Bethesda, Maryland, say their deal announced in July is complete. Cube Hydro spokeswoman Katie Williams said in an email the sale price and other terms are private.

The Yadkin River dams were built beginning a century ago to power an aluminum smelter that once employed 1,000 workers. Alcoa closed the factory in 2007 and has made about \$200 million since then by selling the electricity to commercial customers. Alcoa received a long-term operating license through 2055 and federal regulators in December approved transferring it to Cube Hydro. The license transfer and ownership of the riverbed under the dams are being challenged.



(Photos worth looking at.)

PHOTOS: Schoolfield Hydroelectric Plant

2/3/17, godanriver.com

http://www.godanriver.com/news/photos-schoolfield-hydroelectric-plant/collection_f16c3ad0-ea5a-11e6-8278-e74971de0f1b.html

(Guess wine and hydro go together.)

A Sip of Science: A different type of hydropower: The rise of marine hydrokinetic energy

Feb. 8, 2017, cse.umn.edu

Hydropower is recognized as a clean, renewable energy, but traditional hydropower, typically generated by dams on rivers, can significantly impact the overall flow regime, sediment transport, and ecology of our waterways. Thus, new technologies are being explored that hopes to minimize our environmental footprint while continuing to provide clean, renewable energy. In-streams turbines, also referred as Marine Hydrokinetic turbines (MHK) or current energy converters (CEC), are a relatively new type of renewable energy technology which harnesses the flowing water of tidal channels and rivers to produce electrical energy. The operating principle is very similar to the classical wind energy turbines, albeit here water is the driving fluid that spins the turbine rotor. Like any new technology, there are many research questions that need answering before incorporating this new technology into our energy portfolio. Join CEGE professor Michele Guala and PhD student Mirko Musa from the St. Anthony Falls Laboratory at the University as he discusses one such research question: how do MHK turbines impact bathymetry (the channel bed) and sediment transport in fluvial and tidal systems?

A SIP OF SCIENCE is a science happy hour sponsored by NCED and the St. Anthony Falls Laboratory at the University of Minnesota. It is a forum for researchers to put science in context through storytelling – all over beer, in a cool bar. At 5:30pm on the second Wednesday of each month, NCED will host an happy hour forum in NE Minneapolis.

(The costs of relicensing and the baggage that comes with it are just too much.)

Editorial: PG&E leaves salmon worries to someone else — and you can't blame them

02/05/17, chicoer.com

PG&E cites a litany of reasons, mostly economic, for wanting to pull out of its Butte Creek Canyon hydroelectric project. The utility company is apparently too kind to mention what's likely the biggest reason: It's a hassle. The company is in the business of producing electricity, but on Butte Creek it is also responsible for propping up a threatened species, the spring-run chinook salmon. PG&E has worked for years with government agencies and Friends of Butte Creek to bring the population back from the brink of extinction. Sometimes that happens at the expense of power generation. Sometimes it happens at the expense of another river system, the West Branch Feather River.



It's not easy. PG&E has at varying times been accused of being the fish's savior and being the fish's executioner.

The utility company announced Thursday that the hydro project just wasn't worth it anymore. Of course, the carefully crafted announcement from the corporate communications office avoided blaming complications over fish. There was mention of "increasingly costly regulatory requirements," which reads like a reference to the ongoing and expensive efforts to save the fish. The entire release mentioned the word salmon just once, saying whoever takes over the hydropower project would be required to protect the fish. In other words, it will be someone else's problem. The irony is that if not for the hydro project, the salmon might have gone extinct years ago. Adult spring-run salmon swim upriver in the spring to spawn. They seek cover in the deep pools of upper Butte Creek, above Helltown, and spend the entire summer there, swimming in circles until the water cools in the fall and it's time to spawn. PG&E has agreed, under pressure, to run less water through its canal and powerhouse on Butte Creek and leave more in the waterway above the powerhouse, where the salmon are summering. If not for the infusion of cold, fresh water from the PG&E project, some of those salmon would likely succumb to disease in hot summers. That cool water comes from the DeSabra-Centerville project. In an amazing, century-old feat of engineering, flumes and canals were built to bring water from the West Branch up and over the upper Paradise ridge, then down into Butte Creek. Three powerhouses (Toadtown, DeSabra and Centerville) and three lakes (Round Valley, Philbrook and DeSabra) are part of the amazing plumbing system. All sides have learned a lot about fish management over the years. After a frightening stretch in the 1980s where there were as few as 10 salmon counted in the entire run, now it numbers annually in the thousands. Butte Creek has the largest wild spring run in the Sacramento River system.

PG&E is willing to leave that headache to someone else. The process of handing it off or decommissioning the project could take five to 10 years, PG&E says. In the meantime, PG&E will continue to operate it. If a new, qualified operator is found, that company would have to work with regulatory agencies to protect fisheries, like PG&E has had to do. But what if nobody is found to run the hydro project? Would the state and federal governments continue with the water diversions from West Branch that help keep Butte Creek salmon alive in summer? We'll see. The answer is neither certain nor simple. If things return to their natural state, with no diversions from the Feather River, the salmon will be in trouble. That's why groups like Friends of Butte Creek, and many others, are concerned about the fate of the salmon. It will be years before we get any answers, but one thing is clear: PG&E has grown tired of participating in the debate.

(Persistent bugger!)

Developer still pitching hydroelectric for Niles dam

By Debra Haight Tribune Correspondent, Feb 8, 2017, southbendtribune.com

NILES, IN — An area developer's plea to save the Pucker Street dam in Niles appears to be falling on deaf ears. But David Snyder, chairman of Falling Waters, is continuing his efforts to convince city officials to let him restore the dam so that it can produce hydroelectric power.

Snyder recently sent two letters to City Council members outlining his proposal and also met with city officials. He said Monday that he is not giving up his plans although he hasn't gotten any encouragement from the city. He hopes to make a formal presentation to the council later this month.

In his letters to the council, Snyder said the city's plan to remove the dam on the Dowagiac River will result in the loss of an opportunity to promote renewable energy and harm what is now a popular fishing destination. He did acknowledge that the city will likely have the funding needed to remove the dam through grants and revenue from a rate increase.



"I ask those of you in favor of the dam removal to reconsider your prior held position and to allow Falling Waters LLC to recommission this dam," he wrote in his letter to the council. "Let Niles stand out as a green leader along with Berrien County." Snyder said that he's been trying to convince city officials of the viability of his plans since 2013. Although he has said he wants the city to pay him \$750,000 to take ownership of the dam, he said Monday that money is not the issue and that his company would take over ownership of the dam without any payment. "We do not need \$750,000 from the city," he said. "Money is out there, green energy money is out there through grants, loans and tax credits."

Niles Utilities Manager Jeff Dunlap said Monday that Snyder has not made that offer (of taking over the dam without money from the city) to him or other city officials in writing. Dunlap said the dam removal project is on schedule for work to start later this year and the dam to be removed next year. The state has given the city a deadline of the fall of 2018 to either remove the dam or have it operational. He said the city has already received \$1.5 million in grants and will apply for another \$300,000 grant in December. The city also continues to levy a surcharge on electric customers to pay for the rest of the \$3.5 million project. Dunlap said the city is currently completing a draft environmental assessment for the removal project and is working with pipeline companies to relocate two natural gas pipelines in that area. He said city officials continue to be skeptical that Snyder's company actually has the money needed to restore and operate the dam and whether it could be profitable. For his part, Snyder said his company can't get money until it has control of the dam and pointed to a U.S. Department of Agriculture grant-loan program that funds renewable energy projects. He did say that the project could start making a profit in its first year of operation. USDA business and cooperative specialist Rick Vanderbeek said he's been talking with Snyder over the last few years. Vanderbeek noted that while the Falling Waters project could theoretically be eligible for grants and loans in terms of being a renewable energy project, it wouldn't be automatic. He said the USDA's Rural Energy for America Program has about \$950,000 a year to give out in grants in Michigan each year as well as more money to give out in loans. Projects can get grants for 25 percent of the project cost up to \$500,000. Eligibility factors include having to be located in a rural area and owned by a private business entity. He said that no hydroelectric project has ever been awarded money under the grant-loan program and none has actually ever applied.

You can see more photos and videos here:

http://sfist.com/2017/02/09/oroville_flood_spillway_dam.php



Water:

(Sometimes stuff happens. Looks like more than a crack, more like a gaping hole. If a spillway can't operate as designed a dam is obviously not as safe.)

Engineers begin inspections at damaged Oroville Dam

By Dale Kasler and Ryan Sabalow, FEBRUARY 7, 2017, sacbee.com

State engineers may spill some water from Oroville Dam's damaged spillway Wednesday afternoon to test how much water can rush past the massive hole that formed in the concrete structure. "They're going to start spilling the water to see what happens," said Doug Carlson, a spokesman for the Department of Water Resources, which operates the dam. Engineers found a major crack in the concrete spillway at Oroville Dam early Tuesday, forcing a temporary shutdown of the spillway. Engineers found a major crack in the concrete spillway at Oroville Dam early Tuesday, forcing a temporary shutdown of the spillway. Engineers conducted their first inspections Wednesday morning of the damaged spillway, about 24 hours after a 250-foot-long

pothole was discovered in the massive structure, forcing a halt in water releases. Officials with the Department of Water Resources said the dam itself is safe and doesn't pose a threat to downstream populations, a view echoed by outside experts consulted by The Sacramento Bee. A likely short-term remedy is to resume water releases from the spillway, even if it means creating further erosion in the chute, the agency said. "These are things we can repair," said Eric See, the agency's environmental program manager, in a briefing with reporters late Tuesday. The alternative, which is considered less preferable, is to let Lake Oroville continue rising until water begins cascading in an uncontrolled fashion over the emergency spillway at the north end of the dam. That would create significant land erosion problems, officials said, although the water would flow into an unpopulated area.



With the main spillway shut off, the reservoir – the second largest in California – had taken on about 150,000 acre-feet of water in about 12 hours. The lake level was about 60 feet below the lip of the dam. The reservoir remained about 15 percent empty. Engineers halted releases from the main spillway after a hole was found in the bottom half of the concrete chute. Pictures showed a jagged chunk eroded out of the towering 3,000-foot concrete structure. The cause of the problem wasn't yet determined. "It's not a public safety risk," See said. "Dam failure is not in any way a potential threat." Jay Lund, director of the UC Davis Center for Watershed Sciences said, "I wouldn't evacuate yet. I think they're a ways from that."

Engineers found a major crack in the concrete spillway at Oroville Dam early Tuesday, forcing a temporary shutdown of the spillway.

But Lund and others said the problem is going to make it more difficult to manage high flows from a critical piece of the state's flood-control network, with two months left in California's rainy season.

The lake, which is part of the State Water Project, feeds into the Feather River. Lake Oroville, in Butte County, is the state's second-largest reservoir. Completed in 1968, the 770-foot dam is the tallest in the United States. It can store 3.5 million acre-feet of water. The last major flood in Northern California, in January 1997, did most of its damage on the Feather River. Since then, significant upgrades have been made to the area's levees, and Marysville Mayor Ricky Samayoa said he has confidence in the levees that ring the city. "That last storm showed us how strong our levees are," he said. On Tuesday, after the problem was discovered, Department of Water Resources engineers gradually reduced the flows before shutting off the releases altogether. At that point, Carlson said engineers started releasing water through a power plant at the dam. But the plant released only about 5,000 cubic feet of water per second Tuesday. While that's expected to be increased to 15,000 cfs on Wednesday, that would still be a fraction of the volume of water flowing into the lake – about 128,000 cfs at midday Tuesday. Until the spillway was damaged, the lake was releasing more than 40,000 cfs, according to state data.



At current rates, the agency said the lake has enough room to absorb three days of inflow. The agency said it expected to resume releases from the spillway "at a rate deemed safe," after a more thorough inspection was performed. While resuming releases would worsen the damage to the eroded area, Carlson, the department spokesman, said that's preferable to letting the water continue to fill the reservoir. David Gutierrez, a retired Department of Water Resources dam-safety

expert, said water would pour out of an emergency spillway if the lake were allowed to fill past the brim of the dam. The emergency spillway, which has never been used, is designed for the scenario of the "biggest flood that any overgenerous engineer could ever dream of coming through that system with a full reservoir," said Lund of UC Davis. The flows would be unregulated, meaning the state wouldn't have any control over how much water pours down the emergency spillway, Lund said. What's more, while the top of that secondary spillway is concrete, the main structure is unlined and releasing water could cause erosion, Gutierrez said. Joe Countryman, a retired engineer at the U.S. Army Corps of Engineers, agreed that the overall structure of the dam doesn't appear to be at risk. But releasing more water down the cracked spillway could cause serious harm and create "major dollar damage," said Countryman, a member of the Central Valley Flood Protection Board. The department is also increasing releases from Thermalito Afterbay, a small downstream reservoir, in order to avoid a "drastic reduction" of flows into the Feather River. That's important, Lund said, because levees below the dam could fail if flows are suddenly shut off. "You could cause some slumping and failure in the levees in the next few days," Lund said. "And then you have a bigger (storm) event coming in the next few days from now ... so not only have you got this problem with the spillway, but you've also weakened the channel conveyance downstream."

You can see more photos and videos here:

http://sfist.com/2017/02/09/oroville_flood_spillway_dam.php



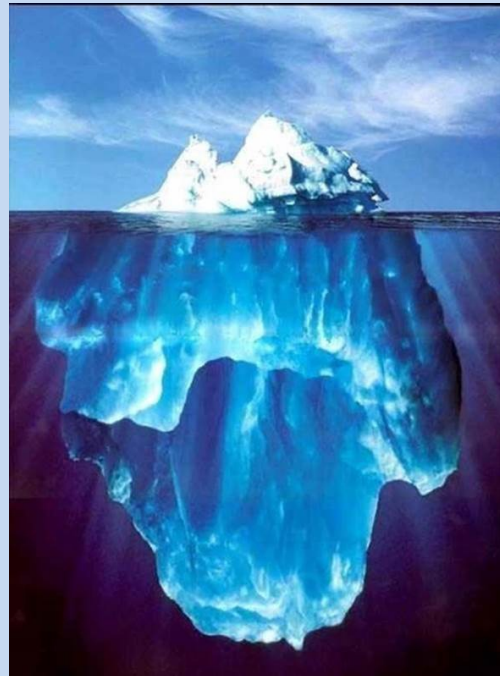
Environment:

(Interesting! Someone sent this to me.)

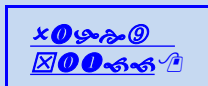
Ever see an entire iceberg?

This is awesome!

This came from a Rig Manager for Global Marine Drilling in St. Johns, Newfoundland. They actually have to divert the path of these things away from the oil rig by towing them with ships! Anyway, in this particular case the water was calm and the sun was almost directly overhead so that the diver was able to get into the water and click this picture. They estimated the weight at 300,000,000 tons.



Pretty cool, eh. Pass it on. **THE TITANIC DIDN'T HAVE A CHANCE!!!!** Gives a whole new meaning to the phrase "Just the tip of the iceberg".



Other Stuff:

(Interesting tidbit.)

The Statue of Liberty Was Supposed to Be Arab Peasant Woman
It was originally designed for the opening of the Suez Canal

By Michael Harthorne, Newser Staff, Feb 2, 2017, newser.com

(NEWSER) – A little-known fact—or as PRI puts it, a "little-known irony"—about the Statue of Liberty seems particularly timely: Lady Liberty was originally designed as an Arab peasant woman. The statue's designer, Frédéric-Auguste Bartholdi, became enamored of Egyptian monuments and designed what we now know as the Statue of Liberty to be placed at the entrance to the soon-to-be-opened Suez Canal in Egypt. Smithsonian Magazine reports "Egypt Carrying the Light to Asia" would have taken the form of a veiled Egyptian peasant holding a torch. But the ruler of Egypt didn't want to pay for Bartholdi's statue, so the Frenchman re-purposed the design into a statue of a Greco-Roman goddess called "Liberty Enlightening the World" and gifted it to the US on the 100th anniversary of the American Revolution.



(Never saw one of these.)

'Blue-Green Fireball' Lights Up Midwest Skies

Meteor captured on dashcam could be seen in Illinois, Iowa, Wisconsin, Indiana

By Jenn Gidman, Newser Staff, Feb 6, 2017, newser.com

(NEWSER) – If you happened to be up late after the Super Bowl (and also follow the National Weather Service Chicago's Twitter account), you would have gotten a sneak peek at the natural phenomenon that the rest of the world is now seeing. "Check out this INCREDIBLE video," https://twitter.com/NWSChicago/status/828522593418346496?ref_src=twsrc%5Etfw the NWS tweeted, directing viewers to a seven-second clip of a meteor, described by the Chicago Tribune as a "bright blue-green fireball," streaking through the sky, as captured by a dashcam in a Lisle, Ill., police vehicle. USA Today reports the sky show could be seen across the Midwest, including in Wisconsin, Indiana, and Iowa. Check out USA Today to see other videos of the meteor. (Hundreds of people called in after a meteor over the Northeast in May.)



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