

11/4/2016



Some Dam – Hydro News™ And Other Stuff



Quote of Note: *“The successful people of this world take life as it comes. They just go out and deal with the world as it is.” - Ben Stein*

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

Ron’s wine pick of the week: NV Vin Vault Cabernet Sauvignon (6/16)

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



Dams:

(It’s never too late. Just don’t go there.)

River deaths spark dam, boater safety initiatives

By Cindy Lutzi, dailygate.com, 10/21/16

Brian Sage lost a good friend to the Keokuk-Hamilton dam in late July when longtime Keokuk boater Rick Lorenz died.

Lorenz was piloting a 27-foot boat that is believed to have gone over the spillway on July 27. Sage also took note of other dam-related boating incidents at or near the dam – one in June and another in September. On June 27, two men were swept through the dam in a fishing boat, killing one of the boaters. In September, three men in a canoe got caught in the Keokuk dam’s churning tailwater but were rescued in time. “I am



working on a project in an effort to promote boater safety and education in our little corner of the

world," Sage wrote in a Facebook post. He's asking questions and gathering information about how river safety and boater education can be improved in the Tri-State Area, already realizing it will have to be a collaborative effort. "I'm approaching the boating clubs and working on raising community awareness," Sage said. "The Southside Boat Club is behind me." A recent meeting at the Keokuk Yacht Club went well, he said.

He's spoken with the Federal Energy Regulatory Commission about dam/power plant safety and boaters, inquired about LeeComm dispatch protocol for river emergencies and searches, and discussed the Keokuk dam with the Illinois Department of Natural Resources regarding practical measures and standards at dam sites. Sage is working with Keokuk Police Chief Dave Hinton and Assistant Chief Jay Whitaker to put protocols in place under the missing persons policy. LeeComm, Lee County's centralized dispatch center, is in the process of establishing river rescue protocols, according to Lee County Sheriff Jim Sholl. "It's in the works," Sholl said. "With a new 28E agreement (a contract that binds rescue agencies into a dispatch entity), now is a good time to be working on new procedures and include something like that." Already too late

Sage believes nothing law enforcement authorities could have done in July would have changed the outcome after Lorenz had been reported missing. It was already too late by the time authorities understood what had occurred. If lights, a video camera recording 24/7 and an alarm had been operating at the dam, authorities might have been alerted to the large craft going through the spillway and had a better idea of where to look. As it happened, no one saw or heard anything, causing searchers to check first in the wrong places. Sage has picked up some useful information along the way. Because the Keokuk dam was built before 1949 – 36 years before the Federal Energy Regulatory Commission instituted guidelines for dams – its safety structure, or lack thereof, is grandfathered in. The Department of Natural Resources can't compel Ameren, the dam's owner, to make changes on the dam.

"The dam at Quincy, Ill., has ropes and metal triangles across so people can grab ahold and keep from being swept through," Sage said. "Once a boat gets in the current by a dam, you're watching yourself go to a slow death." He said the water flowing over the spillway continues to roll over and over, trapping a person in the strong current. "Life jackets won't float in that aerated water," he said. The Keokuk dam doesn't have warning buoys and lights, alarms or exit paths such as ladders for boaters who get in the grip of the current above the spillway, he said. "And down below the dam, there's nothing there," Sage said. "There's no warning sign saying you're in the tailwater of a dam. Those three canoers were lucky." In the absence of such warning materials, he believes a spring training event for boaters could help mitigate dangers. "People with less training and experience – their risk goes up," Sage said. "You have to have more training to drive a moped than to drive a high-capacity engine." Boaters' training also can be worth a 5 percent discount on some boat insurance, he added. Sage wants to post river charts and local numbers for emergencies – or help if a boat motor fails above the dam or similar unforeseen event occurs. The establishment of boater mentors at clubs could link people with experience on the river with people new to the area, and he's looking for a system that recognizes the failure of a boat to return to the dock after dark.

"River users are loosely connected to each other," he said. "We've got to do something about this for ourselves." "I am not asking for the elimination of risk," Sage wrote in a post on social media. "I am asking for things that may reduce the risk for our boating community. And I am not pointing a finger ... We (the local boating community) need to accept our part of shortcomings which need addressing. And we are." Others Sage is networking with include Ken Smith of the Indiana DNR who has been working on dam reform for a few years now; Association of Dam Safety members Paul Mauer of the Illinois DNR and Ben Slater of the Iowa DNR; Lee County Deputy Sheriff Scott Bonar; Hancock County (Ill.) Sheriff Scott Bentzinger; FERC representatives Linda Jemison, Thomas Olson and James Puglisi; U.S. Army Corps of Engineers representative Samantha Helig; and Keokuk Mayor Tom Marion.

(Tragedy at a low head dam. If it's not good for hydro or anything else, take it out of the river.)

Mom sues over drownings of 2 children near Wilmington's river dam

By Alicia FabbreChicago Tribune, 10/21/16, chicagotribune.com

The city of Wilmington, Ill. is being taken to court for a river dam it owns that some have called "a drowning machine."

Since 1982, 21 people have drowned and another 20 have been rescued at the dam on the Kankakee River, according to a lawsuit filed Thursday in Will County.

The suit, filed by the mother of two Joliet children who drowned on Memorial Day near the dam, seeks more than \$1 million in damages from the city for the deaths of Eder Arroyo, 12, and Abigail Arroyo, 13.



"So many people have died. When is it going to end?" asked Katherine Cardenas, a Chicago attorney representing the children's mother. "When will the city put the public safety before recreational park areas? When will it end? That's all the family wants is for no other person to have to bury their children because of this dam."

After her brother drowned at a dam in rural Wilmington in 2000, Kathryn Pietraszek thought officials would do something to end the series of deaths there. Over the last 35 years, the man-made dam has claimed the lives of children, the elderly and even would-be rescuers trying to save others from the dangerous undertow. In 2006, a 4-year-old boy was saved after falling in the water near the dam, but three people who rescued him — including the boy's mother — drowned. In 2000, two adults canoeing near the dam capsized and drowned. On May 30, Eder and Abigail were at a Wilmington park near the dam with family. Police said Eder went in the river to try to touch the dam's waterfall and started struggling to get out. His sister went in trying to save him and she, too, became trapped. Rescuers later were able to remove Abigail from the river, but she died that night at a hospital. Eder's body was found downriver two days later. The lawsuit cites a 2007 report from the state of Illinois recommending fixes for the dam. Cardenas noted that one of the suggested fixes included placing large boulders at the bottom of the dam to break up the "underwater vortex" beneath the surface of the Kankakee River.

A Joliet family already mourning the death of a teenage girl learned Wednesday that the body of her younger brother was found in the Kankakee River, about 3 1/2 miles from where the siblings became trapped in turbulent water on Memorial Day near a dam in Wilmington. Cardenas argued the state has wanted to take over the dam, but Wilmington officials have refused, noting that the dam and the park surrounding it, known as Island Park, are defining features of the city.

"This park is advertised as a place for families," she said. "The city of Wilmington actively invites family and children, yet there's this extreme danger there that they're unwilling to fix."

Cardenas said the children's mother, Beatriz Adame, did not want to comment on the lawsuit at this time. The city of Wilmington issued the following statement Friday: "All of us in the Wilmington community offer our continued condolences to the family and friends of the Arroyo children who died in the tragic accident in the Kankakee River. The men and women of the city of Wilmington work every day to ensure the safety and good quality of life for our residents and all who visit. We are unable to comment further on the pending litigation at this time."

In 2012, Illinois started removing some low-head dams like the one in Wilmington, citing safety concerns, but the state budget crisis halted the process. In 2013, there were discussions about transferring ownership of the dam to the state, but some local officials resisted. Sunlight skimmed the Fox River, and the sound of water falling over the Kimball Street dam created a serene setting on the evening set aside to remember two Elgin firefighters who died there 42 years ago when it wasn't as calm. Graff

previously has said local officials want to improve safety at Island Park, but they fear they will lose the park despite assurances from state officials that the river will continue to flow just as it does now. "Our island is the jewel of Wilmington," Graff said in an August article in the Tribune. "A lot of people from the area come down to enjoy nature here. We're proud of it." This past spring, the city hired an engineering firm to study the flow of the water to see if cutting notches in the top of the dam would reduce or eliminate the force of its undertow. "We're all in agreement, we need to do something," Graff has said. "We're trying to maintain the character of the river without removing the whole dam." *Robert McCoppin contributed; Alicia Fabbre is a freelancer.*

(Oh my, we got to worry about the fish too.)

Fishermen upset about draining of Killdeer Reservoir

By Rob Wells, October 20th 2016, abc6onyourside.com

MARSEILLES, Ohio (WSYX/WTTE) — Brandon Christian has loved to fish and boat at the Killdeer Reservoir in Wyandot County since he was a kid. That's about to change as the state drains the 285-acre, 40-foot deep waterway out of dam safety concerns. He's upset because of fish that may die in the process. "I understand them not being able to fix it because of the dam, but they're not making any effort to move the fish, they're leaving them here to die" Christian said.



The Ohio Department of Natural Resources says that most Bluegill, Catfish, and Bass should be able to escape to other nearby waterways that the reservoir feeds into as part of a gradual lowering process.

ODNR says they have no formal way to scoop all the fish out and say while they've considered options, it's too costly to tear out and replace the dam and reservoir originally built as part of the Killdeer Plains Wildlife Area in 1971. Water was first lowered in the reservoir in 2005, when problems were first detected. Officials say now, there are concerns rising waters could cause the dam to fail which could flood nearby homes and businesses. State officials say once the draining process is complete, reservoir will be transformed into a wildlife area as part of redevelopment. "I just wish they'd fix it, a lot of people enjoy coming up here to fish in the summer" Christian added.

(Counterpoint. They talk as if 1,000 MW is a drop in the bucket – it's not and we're talking about dependable power.)

Nancy Hirsh: We can restore salmon and have carbon-free energy

Opinion by Nancy Hirsh, OCT. 22, 2016, spokesman.com

The Spokesman-Review's Sept. 30 article "Feds asking public to weigh in on breaching Snake River dams" allowed to go unanswered a statement claiming that, if the region chooses to remove the four outdated and expensive dams on the lower Snake River, the hydroenergy they produce will have to be replaced by building a carbon-emitting natural gas plant that adds to climate pollution. In short, the claim is that we can have either salmon restoration or we can have carbon-free energy, but not both. This is a false choice of the kind that moved the federal court to find that the federal agencies failed to adequately consider viable options, including ones that can replace the electricity from these dams with carbon-free, clean and renewable energy and help to bring back our amazing salmon. Here are the facts they are overlooking. The Northwest electricity grid has changed tremendously in the past 20 years. Building on our abundant hydropower resources, Washington, Idaho, Oregon and Montana have developed new, renewable resources totaling more than 2,500 average megawatts (MW) from wind, solar, geothermal and biomass energy, with another 1,500 MW under construction or in the final stages of approval. On top of this we

continue to make strong advances in conservation and energy efficiency, saving more than 5,500 MW of electricity over the years.

The four lower Snake River dams produce about 1,000 MW of electricity each year, or about 5 percent of the Northwest's supply. The claim that the only way we can replace this power is by building a new natural gas plant to burn fossil fuels is just not credible in light of the changing ways in which electricity needs are being met. Even as capacity from new renewables expands, the electric grid is evolving, and we're becoming smarter about how we generate, consume and manage electricity. Despite dire predictions from skeptics, utilities and electricity system operators have successfully integrated new, renewable resources and built energy efficiency equivalent to over a dozen natural gas-fired plants. We are improving how we bundle wind and solar from different geographic areas to increase reliability of renewable energy contributions to system operations. And we are beginning to use energy markets to more efficiently utilize all the existing resources we have.

Finally, the region is expanding a broad collection of energy efficiency, distributed clean renewables, energy storage and load management programs that make renewables even more reliable and affordable. In these ways and others, Northwest ingenuity has proved the skeptics wrong while also providing some of the lowest electric rates in the nation. By the time changes to the lower Snake River system are made, the portfolio of low-carbon resources will be even more robust and more than able to meet the capacity and energy needs of the region. Meanwhile, the cost of new solar, wind and other renewables is plunging, while the cost to maintain the aging dams is only going to increase. That's why two recent studies, one by the NW Energy Coalition and one by Rocky Mountain Econometrics, find that we can replace the power from the four lower Snake River dams at little additional cost to customers through new, renewable energy, purchases of clean energy from existing sources, and smart planning and system coordination. All of this is a part of building an integrated and modern electricity grid that meets customers' needs, protects the environment and contributes our share to climate action. Our greatest asset is our ingenuity and ability to adapt. If we apply these skills to the challenge of providing carbon-free, clean energy, and restoring healthy salmon populations, we will secure a clean, reliable and affordable energy future. That's why we emphatically do not have to choose between restoring the ancient cycle of salmon in the Northwest that is part of our region's way of life and having low-carbon energy. We can and should have both. *Nancy Hirsh is the executive director of the NW Energy Coalition, an alliance of environmental, labor, civic, faith and human service organizations.*

(Now, the politicians are getting involved trying to stop a tidal wave.)

Vote no on removing Klamath River dams

Letter to the editor, 10/23/16, heraldandnews.com

Ballots are in the mail, and now is the time for each and every voter to cast their individual vote for their preferred candidate and to say yes or no to a list of ballot measures. To date, one specific advisory ballot seems to be flying under the radar. This would be the basic question whether you are in favor of removing the four hydroelectric dams on the Klamath River, under the Klamath Hydroelectric Settlement Agreement. After all the controversy with some trying to keep this advisory ballot off the November election and having been on the front page, numerous times, less than two months ago, one would think political conversations would still include the dam removal Advisory Ballot. This advisory ballot finally allows the citizens of Klamath County to have the opportunity to voice their opinion on the proposed removal of the four Klamath River dams. If you are a voter, you should exercise your right to vote no to dam removal.

Also, if you are a PacifiCorp rate-payer or a taxpayer, you should not miss this opportunity to vote no to dam removal. Make your opinion known. Some want you to believe this is nothing more than a private property issue. If this is really about private property rights, and Warren Buffet actually wants the dams to come out, then let him pay for it. Why should the rate-payers and

taxpayers pay that bill? After all, the dams are his private property. **Some want you to believe that your vote does not matter.** I find that very untrue and rather offensive. This is a most critical election cycle and your vote does matter on each and every issue and candidate. **Be an educated voter. Vote no to the removal of the Klamath River dams.** *Tom Mallams, Klamath County Commissioner*

(Wonder what's in the fine print.)

Historic agreement reached on Isleta Diversion Dam in New Mexico

October 22, 2016 by Kayla Root, krqe.com

ISLETA PUEBLO, N.M. (KRQE) – The Bureau of Reclamation says they reached an agreement Friday with the Isleta Pueblo and the Middle Rio Grande Conservancy District resolving past issues associated with Isleta Diversion Dam. **Reclamation says the Isleta Diversion Dam was built by the Middle Rio Grande Conservancy District on Isleta Pueblo land in 1934 and they rehabilitated the dam in 1954, but it was never fully granted to the District or Reclamation.** This Global Settlement reached Friday will grant the United States easement for the next 100 years, according to the Bureau of Reclamation. **The Pueblo will now receive full support from Reclamation and MRGCD in maintaining the dam.**



(Hurricanes dump too much water. Small dams just can't take it.)

Rain dumped by hurricane causes at least 17 dams to fail

By - Associated Press - Sunday, October 23, 2016, washingtontimes.com

RALEIGH, N.C. (AP) - **At least 17 dams in North Carolina burst from the rain dumped by Hurricane Matthew, most of them in the Cape Fear River Basin.** The News & Observer of Raleigh reports (<http://bit.ly/2edkN0v>) state inspectors knew where the rains could cause catastrophic failures. During Matthew, they were “babysitting” critical dams to be able to call for an evacuation if needed. **Dam Safety Program spokeswoman Bridget Munger says none of the 27 deaths in North Carolina attributed to Matthew was caused by a dam failure.** Most of the more than 3,200 dams statewide are earthen and privately owned. The state's 62 inspectors must inspect all high-hazard dams at least once every two years. Those are dams whose failures could cause death or costly property damage. Others can go decades without being inspected.

(You gotta be kidding me.)

Lower Snake River dams have a long history of controversy

By Becky Kramer, spokesman.com, OCT. 24, 2016

The Lower Snake River dams have always been controversial, Idaho historian Keith Petersen wrote in his 1995 book about the dams, **“River of Life, Channel of Death.”** Early on, fish advocates worried about how the dams would affect salmon survival, he wrote. Salmon and steelhead have shrunk from the prodigious runs described by early white settlers, but they had stabilized by the 1930s and were important to the economy of small Northwest towns. Also in the 1930s, several groups had formed to promote barge traffic from Lewiston to Portland. Inland Northwest farmers were paying railroads nearly \$5 per ton to ship their wheat to Portland or Seattle. They wanted more competitive shipping rates, but rapids and whitewater on the undammed Snake River stood in their way.



In 1945, Congress authorized the four Lower Snake dams as multiple-purpose projects. The Northwest's growing economy needed energy, and the dams could produce hydropower as well as make barge traffic possible. Creating a pool for irrigating the dusty but productive farmland along the river was another objective. But the U.S. Department of the Interior proposed a 10-year moratorium on dam-building a couple of years later. Salmon and steelhead appeared to be successfully negotiating fish ladders at Bonneville Dam near Portland, but fisheries biologists worried about cumulative impacts of a series of dams proposed for the Columbia and Snake, Petersen wrote. Critics of the Lower Snake dams included the Washington state Department of Fisheries, whose director argued for preserving the free-flowing Lower Snake and access to its productive tributaries, the Clearwater and Salmon rivers.

Ice Harbor, located upstream from the confluence of the Columbia and Snake rivers, was the first of the four dams proposed for construction. "Fish advocates fought Ice Harbor so hard because once it was built, they knew it would be impossible to stop the other three dams," Petersen wrote in his book. Ice Harbor Dam's opponents had an ally in President Dwight Eisenhower, who didn't want to spend federal money on new dam development. But Washington's powerful U.S. senator, Warren Magnuson, eventually pushed the project through. After being defeated multiple times, Magnuson persuaded a Senate-House conference committee to add \$1 million to a spending bill to start Ice Harbor's construction. Ice Harbor Dam opened in 1962, followed by Lower Monumental Dam in 1969 and Little Goose Dam in 1970.

The initial construction money for the fourth dam, Lower Granite, was approved in 1965, but the spending demands of the Vietnam War slowed future appropriations. And nationally, public perceptions about dams had started to change, Petersen wrote. The first Earth Day was celebrated in 1970, and landmark U.S. environmental legislation followed. Lower Granite eventually opened in 1975, providing the long-sought barge route stretching from Portland to the Port of Lewiston. The Northwest Steelheaders Association had led the fight against Lower Granite's construction. They couldn't stop it, but their efforts helped kill a fifth dam project on the Lower Snake at Asotin, Washington, Petersen wrote.

(The anti-dam movement is on a roll now,)

Taking Down Dams and Letting the Fish Flow

By MURRAY CARPENTER, OCT. 24, 2016, nytimes.com

BANGOR, Me. — Joseph Zydlewski, a research biologist with the Maine Cooperative Fish and Wildlife Research Unit of the United States Geological Survey, drifted in a boat on the Penobscot River, listening to a crackling radio receiver. The staccato clicks told him that one of the shad that his team had outfitted with a transmitter was swimming somewhere below. Shad, alewives, blueback herring and other migratory fish once were plentiful on the Penobscot. "Seven thousand shad and one hundred barrels of alewives were taken at one haul of the seine," in May 1827, according to one historian. Three enormous dams erected in the Penobscot, starting in the 1830s, changed all that, preventing migratory fish from reaching their breeding grounds. The populations all but collapsed. But two of the dams were razed in 2012 and 2013, and since then, fish have been rushing back into the Penobscot, Maine's largest river. "Now all of a sudden you are pulling the cork plug and giving shad access to a



truckload of good habitat,” Dr. Zydlewski said. Nearly 8,000 shad have swum upstream this year — and it’s not just shad.

More than 500 Atlantic salmon have made the trip, along with nearly two million alewives, countless baby eels, thousands of mature sea lamprey and dozens of white perch and brook trout. Striped bass are feeding a dozen miles above Bangor in waters closed to them for more than a century. Nationwide, dam removals are gaining traction. Four dams are slated for removal from the Klamath River alone in California and Oregon by 2020. Just a few of these removals have occurred on such large rivers, which play an outsized role in coastal ecosystems. But the lessons are the same everywhere: Unplug the rivers, and the fish will return.

Photo

Biologists measure a young salmon at Milford Dam, in Milford, ME. Credit Murray Carpenter In the Elwha River, on Washington’s Olympic Peninsula, engineers removed two dams, one more than 200 feet tall, from 2011 to 2014. Afterward, chinook, chum and sockeye salmon, along with steelhead trout, quickly moved upriver, said Jeffrey Duda, a research ecologist at the Western Fisheries Research Center of the U.S.G.S. “Once you remove these dams, migratory fish will probe into the watersheds,” Mr. Duda said. And there are more subtle changes. The migratory salmon quickly began enriching the food web of the Elwha River with oceanic nutrients. A year after the Elwha Dam came down, Mr. Duda and his colleagues found chemical signs of marine-derived nutrients in the blood of American dippers, small aquatic songbirds that forage in rivers. But the turnout has rarely been as vast as it has on the Penobscot. Like other large coastal rivers, the Penobscot once funneled millions of pounds of fish inland from the ocean each spring. But fish populations suffered in the 1800s as fishing pressure increased, water quality diminished and, most consequential, dams blocked the fish from their spawning grounds. Until 2013, fish ran a gantlet of three large dams in the first 10 miles of the Penobscot above head of tide, near Bangor. The Penobscot River Restoration Project, a consortium of government and tribal agencies, conservation groups and hydropower companies, spent \$60 million to remove the first two dams and to install a fish lift at the next dam upstream. In June, the group dedicated the last piece of the project, a bypass channel around a dam on an upriver tributary.

Before the dams came out, biologists began studying the river’s fish to better understand the baseline conditions. “We asked the question, ‘Who’s knocking at the door?’” Dr. Zydlewski said. Shad were so diminished that fewer than 20 had passed the fishway of the former Veazie Dam over several decades. But Dr. Zydlewski and his colleagues, using sonar, documented a small population that persisted below the dam. Everything changed with the removal of the Veazie and Great Works dams, Dr. Zydlewski said. This year, precisely 7,846 shad ventured upriver, past the two demolished dams and through the fish lift at Milford Dam, which is now the first obstacle fish reach. Other shad, like those Dr. Zydlewski was tracking beneath the boat, stayed downstream; he and his colleagues say they are not sure why. Another research team, led by the University of Maine’s Michael Kinnison and Gayle Zydlewski (who is married to Joe Zydlewski), discovered a previously unknown population of the endangered shortnose sturgeon in the Penobscot, near Bangor. Since the dams have come down, some of the sturgeon have nosed upstream into the newly free-flowing river.

A salmon in a holding tank at the fish passage facility in Milford, ME. Credit Murray Carpenter The Penobscot also hosts the nation’s largest run of Atlantic salmon, another endangered species. Historically, salmon runs may have numbered 60,000, but recent returns fell to less than 1,000, and as low as 250 in 2014. Among the salmon’s challenges is changing climate, bringing warmer waters and unfavorable conditions at sea. In predam days, salmon were far outnumbered by shad and their smaller cousins, alewives and blueback herring, also known as river herring. In anticipation of the dam removals, state biologists in 2010 began stocking lakes in the Penobscot watershed with the herring; fish that swam up the Penobscot this year are their progeny. This strategy proved effective on the neighboring Kennebec River, where the Edwards Dam was removed in 1999. There, river herring now return by the millions and support a commercial fishery.

John Banks, the director of the Penobscot Indian Nation Department of Natural Resources, said his tribe long relied on migrating fish like salmon and shad for sustenance, and used river herring to fertilize their gardens. "It's just fantastic to see the river coming back to life so quickly after the dams have been removed," Mr. Banks said. "And the alewives are so key to this. They are the keystone species that helps drive the whole river ecosystem." River herring are prey for everything from ground fish to seals. And because they are so numerous, they serve an ecological role as prey buffers. Juvenile Atlantic salmon, for example, are more likely to avoid predators when migrating seaward through schools of river herring, which allow them to sneak out through the crowd. Much of the Penobscot's recovery has been subtle, but some indicators of the river's link to the ocean are quite conspicuous. Recently, seals showed up in the river, miles above the old Veazie Dam. Dr. Zydlewski sees the annual migratory cycle as a grand spectacle of predators and prey. "You don't see the fish, but it's hard to miss the eagles and osprey. Just like striped bass, they follow the food," he said. "It's a shadow of what it once was, but it's exciting to see how it might come back."

(It's hard to stop a large snowball going downhill.)

Removal of Klamath Dams Would Be Largest River Restoration in U.S.

History

By Molly Peterson, October 24, 2016, kqed.org

Our metal powerboat is puttering near a bend low in the Klamath River. Morning fog pours off the hills against a flat gray sky, but we can see a fight up around a bird's nest. "The eagles are perched up here in the tree," says Mike Belchik, a fisheries biologist for the Yurok tribe, whose lands extend 44 miles from the Pacific Coast inland. "The osprey is dive-bombing them." Belchik claps loudly to break up the birds. "They both live around here and they fight all the time," he laughs. People along the Klamath once fought bitterly over this river, too. But that's beginning to change. Four hydroelectric dams may soon be demolished along the Klamath, near the California-Oregon border. Hundreds of miles of the Klamath would run free to the Pacific Ocean — opening up the largest river restoration in U.S. history.



What's made this possible is compromise, forged over years of negotiation, among upriver and downriver interests, in California and Oregon, farmers and tribes and fishery advocates. Two incidents of deep and painful loss, in 2001 and 2002, sparked this new era. First, the federal Bureau of Reclamation cut off water supplies to almost all irrigators on the Klamath Irrigation Project upriver, to protect water flows to endangered fish, including salmon. Angry farmers who were losing their crops converged at the main irrigation canal's controls in Klamath Falls, Oregon, turning the water back on. A crowd of 18,000 cheered them on. The next year, when irrigators once again were able to take water from the river, Belchik says the resulting low flows were deadly downriver. "We started getting calls about dead fish," he says, standing along the riverbank. "There's tens of thousands of fish, rotting fish, big 20-pound salmon, four deep on all of the shorelines." He wrinkles his nose. "The smell more than the look. It smells like death." Now with broad political support, the power company that owns the dams, PacifiCorp, has applied to the Federal Energy Regulatory Commission to give up its licenses so that four dams, three in California, can be blasted and jackhammered away.

PacifiCorp shareholders will contribute \$200 million toward dam removal. California will contribute up to \$250 million more in Proposition 1 money, to pay for removal and river recovery, under an agreement signed in April at the mouth of the river. Gov. Jerry Brown said the goal now is

sustainability. “Not for the next election cycle but for eons and thousands of years,” he said. “That’s the significance here. We’re starting to get it right after so many years of getting it wrong.” Like a lot of Western rivers, the Klamath has been a workhorse serving the people around it. Inland and upriver, its water goes to irrigators on a federal project, farms and grazing in two states. Over the last century four dams harnessed its energy. The oldest hydroelectric dam is Copco 1, which is 132 feet steep between rock walls trailing bright green moss.

Cheap, reliable hydropower made at Copco helped upriver irrigators pump water to crops and cattle. Standing atop it, PacifiCorp spokesman Bob Gravely says the company has made money for shareholders. “Removing these dams is not something that the company had set out to do,” he says now. But environmental laws put on the books after dams were built changed the equation. Gravely says PacifiCorp would have spent hundreds of millions of dollars updating dams to protect fish and water quality, in compliance with the Clean Water Act and the Endangered Species Act, among others. “This is the least cost outcome for our customers that we have,” he says. It’s not often that a private company seeks to get rid of its own dams. The petition to federal regulators is kind of an end run around Congress and its politics. Five years ago, a broad coalition of river interests agreed on a plan to allocate water resources, protect economic interests, and yes, remove dams. The deal required congressional action. But nothing happened.

Still, it’s not a done deal. FERC will receive public comment on the decision, and some of it will come from fiercely independent rural Siskiyou County, where 80 percent of voters oppose dam removal, period. Siskiyou County Supervisor Grace Bennett says she’s suspicious of the science underpinning dam removal, and the financial risks of such a major change. “We want answers,” she says. “And we want to be not held responsible when this — and I’m going to say this ‘grand experiment,’ which we feel we’re in the middle of — doesn’t turn out the way we want. And they



leave us doing lots of damage to our county.” Even if the dams are removed, two major questions remain for the Klamath Basin: How to share water and how to help fish recover.

Dozens of local stakeholders are starting to hash out those questions, including Oregon rancher Becky Hyde. Congressional opposition or inaction could still get in the way of compromise. But Hyde says she hopes local interests triumph.

“I don’t think a healthy Klamath is solely dependent on whether or not the U.S.

Congress decides to pay attention,” Hyde says. “We decide. We choose while we wait for them to wake up. We choose how to treat each other while we wait for them to start making wise choices.” In this basin, those choices are personal, says Oregon alfalfa farmer Gary Derry. After the water shut off in 2001, his son moved away. Now his younger daughter is weighing the same choice. “I don’t want to see my kids leave. I don’t want to see anybody down the river, their kids leave,” Derry says. He points out his daughter is graduating with a soil science degree. “I want to get back to where we have a river community, top to bottom, that can survive. That’s what I want.” If regulators approve dam decommissioning, hundreds of miles of river would open up for fish and people. Copco 1 and the other three dams would go silent in four years.

(They keep piling it on.)

The fading grandeur of the Glen Canyon Dam Silt and erosion threaten to clog up the enduring structure.

By Steve Tarlton OPINION Oct. 25, 2016, hcn.org

Note: the opinions expressed in this column are those of the writer and do not necessarily reflect those of High Country News, its board or staff. If you’d like to share an opinion piece of your own, please write Betsy Marston at betsym@hcn.org.

It was 1973, and as I looked over the newly created Lake Powell from the top of Glen Canyon Dam, I wondered what the river had been like before. The narrow gorge now spreading out the Colorado River seemed far less interesting than the labyrinth I tried to imagine beneath the placid water. Our tour



guide noted, "Of course, the environmentalists think that saving that empty canyon is more important than providing basic services to millions of people." One of my fellow Indian Health Service engineers chimed in: "Exactly where are the millions of people that will benefit from this project?" "Well," our guide thought a minute, "Southern California, Phoenix and Tucson, I believe." "What about the Navajo Reservation? Do they get any water or power?"

"Well," the guide answered, "I guess you could count the recreational benefits." We all groaned. Our guide tried again: "If it weren't for Glen Canyon, Lake Mead would fill up with silt in about 10 years."

In 1964, the American Society of Civil Engineers voted Glen Canyon Dam the outstanding engineering achievement of the year. This quickened our interest, so he elaborated, "It's not really official, but nearly two-thirds of the capacity of Lake Mead has been lost due to inordinately high siltation rates. This upstream dam will intercept the silt and minimize the capacity loss at Lake Mead, prolonging its useful life." Again the voice from a fellow engineer from the back, "How long before Lake Powell fills up with silt?" Our guide shook his head. "Do you have any idea how big this reservoir is? It won't be a problem in our lifetime, I'll guarantee." Six months later, I gazed out across the desolate landscape of the Navajo Reservation where dry washes — rivers of sand — showed where water had flowed after the frequent — and violent — summer rains. Erosion was the predominant surface feature, and the flat ground was only relieved by a low range of buttes to the north.

My Navajo translator and I had come to see a Navajo resident who wanted us to run water to his house from higher up the wash. Years ago, his father had worked for the federal Civilian Conservation Corps on a pipeline that brought the water down to the surrounding flats, where they had cultivated fields. On a sand dune covered with greasewood, he kicked aside a layer of sand to reveal a broken concrete pipe fully 18 inches in diameter. It was hard to believe that at any time in the last 40 years this arid parcel of desert had been irrigated, but the pipeline could be traced through the sand, mute evidence of some decayed dream to turn the desert green. The pipe led through the bed of a wash upstream until it reached a spot where the wash was blocked by a large volcanic dike. The volcanic walls were more resistant to erosion by the wind and water, so they protruded above the sandy soil, where the wash formed a V-shaped breach in the dike. The bottom half of the breach had been filled by hand-placed stone, grouted in place. This dam was a work of art, silent testimony to whatever craftsmen had labored to haul and place each stone in a giant mosaic that soared nearly 60 feet above the floor of the wash. None of us spoke, but we admired the structure in silence for a few moments.

Looking down from the top of that dam, I remembered the view from a similar angle at Glen Canyon Dam. While the Colorado River had coursed as a silver thread through steep canyon walls, the dry wash here meandered through squat hills out to the sheep-dotted desert flats. Sand had replaced the reservoir. It shouldn't have been surprising. How could anyone hope to overcome the forces of nature that decreed this vast land a desert? I pictured Lake Powell, as low now as it has ever been, completely filled with silt, a sandy surface of greasewood and sagebrush. Where Anglos had once come to play in the lake, sheep would once again wander and browse. No system of dams can capture and hold the Colorado River for long. How could we

think that the dams we built a half-century ago were anything but temporary? The Bureau of Reclamation tour guide in 1973 seemed so confident about how long Glen Canyon Dam would endure, but I recall a scrawl of graffiti on a sandstone wall near a Lake Powell turnout. It read: "NATURE BATS LAST." *Steve Tarlton is a contributor to Writers on the Range, the opinion service of High Country News. He is an environmental engineer who worked on the Navajo Indian Reservation from 1972 to 1974. He now lives in Golden, Colorado, and blogs at www.writesofnature.com.*

(Not a lot of shakin' going on.)

Army Corps: No issues from Old Hickory quarry blasts

By Stephen F. Murphy, October 24, 2016, tennessean.com

Per the developer's blast plan, recently shared with the Corps, blasting will be limited to once or twice a week.

Experts from the U.S. Army Corps of Engineers were on site at Old Hickory Dam, TN on Oct. 6 to observe readings on dam safety monitoring equipment in conjunction with the first test blasts conducted by the developers at the new Old Hickory Quarry, located adjacent to the Corps' dam and reservoir.



The Corps will continuously monitor all future blasting to ensure the safety of the dam and the many citizens who depend on it. Over the past few months, the Corps worked with the quarry developer to install additional instrumentation along the dam's earthen embankment to provide enhanced monitoring of each blast.

This instrumentation and the blast monitoring program are a proactive and cooperative arrangement between the quarry's developers, Industrial Land Developers Inc., and the Corps of Engineers to ensure that the Corps will have advance notice of each blast to facilitate tracking vibration levels.

The instruments, which include seismographs and piezometers, monitor ground vibrations and water pressure to ensure that the blasts stay within established tolerable limits. Thanks to modern technology, these instruments send data automatically and wirelessly to Nashville's geology section, allowing the Corps' professional geologist to track and analyze the data on every blast. The first series of test blasts occurred on Oct. 6, with the instruments showing them well within prescribed safe limits. The blasts barely registered on the instruments and the Corps' engineers observed no fly rock, a concern expressed for the nearby Corps recreation area beach. In accordance with the developer's blast plan, recently shared with the Corps, blasting will be limited to once or twice a week, and these only during daylight hours. At the present levels, intervals and timing, the blasting causes no risk to the stability of Old Hickory Dam or its earthen embankment. Neither has ever failed, despite some erroneous reporting, and we're here to ensure neither ever will. The Corps will continue to monitor to ensure the dam's safety and will communicate its findings. Lt. Col. Stephen F. Murphy is the Nashville District commander for the U.S. Army Corps of Engineers.



Hydro:

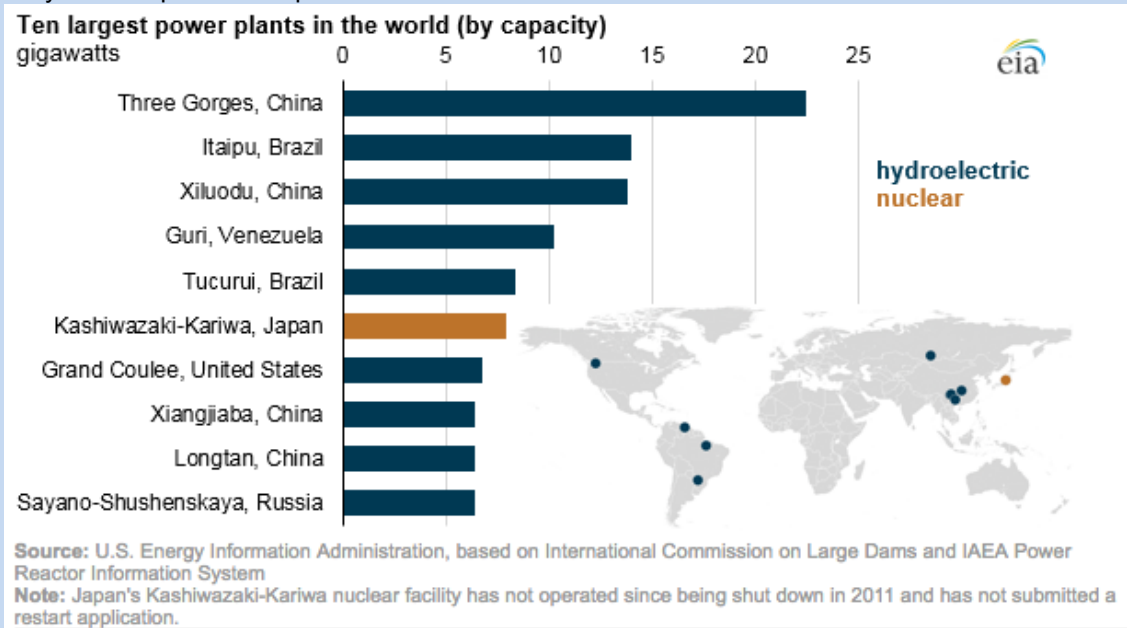
(Should say 9 of the 10 largest power plants are hydro.)

THE WORLD'S NINE LARGEST OPERATING POWER PLANTS ARE HYDROELECTRIC FACILITIES

October 18, 2016, By PennEnergy Editorial Staff, Principal contributors: Nancy Slater-Thompson and Slade Johnson, pennenergy.com, Source: U.S. Energy Information Administration

An estimated 62,500 power plants are operating around the world, with a total installed generating capacity of more than 6,000 gigawatts (GW) in 2015. The nine largest operating power plants in the world by capacity are all hydroelectric power plants. Four of the world's ten largest power plants are located in China, and all four of those plants began operating in the past 13 years. The world's largest dam, Three Gorges, is located on the Yangtze River and has a capacity of 22.5 GW. Hydroelectric power is the second-largest source of electricity in China, after coal, and accounted for 20% of the country's total generation in 2015.

South America is home to three of the world's largest power plants. Brazil's Itaipu Dam, located on the Parana River that forms the border between Brazil and Paraguay, has a capacity of 14 GW. Although the Itaipu Dam is the second-largest power plant in terms of capacity, it ranked first in the world in generation, producing 89.5 billion kilowatthours (kWh) in 2015, compared to Three Gorges' output of 87 billion kWh. Differences in seasonal flows of the Yangtze and Parana rivers account for differences in the output of the Three Gorges and Itaipu Dams, respectively. The Kashiwazaki-Kariwa nuclear power plant in Japan is the largest nuclear plant in the world and the sixth-largest power plant of any type in the world. However, Kashiwazaki-Kariwa is among the many nuclear plants in Japan that were shut down in the aftermath of the accident at Fukushima



in 2011 and has yet to file for a restart application. The Grand Coulee Dam is the seventh-largest power plant in the world and the largest dam in the United States. It supplies power to eleven states (Washington, Oregon, Idaho, Montana, California, Wyoming, Colorado, New Mexico, Nevada, Utah, and Arizona), as well as Canada. Grand Coulee Dam was the largest power plant in the world from 1949 through 1960, when power plants in Russia and Canada surpassed Grand Coulee. After an expansion, Grand Coulee was again the largest in the world from 1979 through

1986, when it was supplanted by Venezuela's Guri Dam. The Sayano-Shushenskaya Dam in Russia is the tenth-largest power plant in the world. Located on the Yenisei River, it is the largest power plant in Russia, with a capacity of 6.4 GW. Hydroelectric power accounts for 21% of Russia's electricity generation.

The capacity of large hydroelectric plants is generally based on the capacity and the number of turbines installed, rather than on the volume of water in the reservoir behind the dam. For instance, the Three Gorges Dam could, at the maximum level possible, hold about 10 trillion gallons of water. Dams with lower electric generation capacities, such as Venezuela's Guri and Brazil's Tucuruí dams, can hold more water, with maximums of 36 trillion and 12 trillion gallons, respectively. A trillion gallons weighs about 4.2 billion tons and occupies the volume of a cube that is almost one mile (or 1.56 kilometers) wide. Several countries are building large power plants to meet growing electricity demand. Some of the soon-to-be-largest power plants in the world are hydroelectric plants under construction in countries such as China and Brazil.

(More hydro at locks and dams. Photo of a slide.)

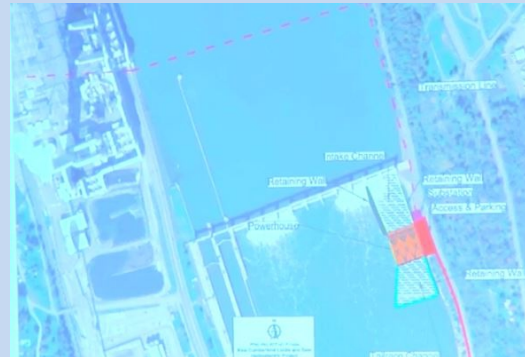
Hydroelectric power plant in development along Ohio River

By Ryan Eldredge, October 19th 2016, wtov9.com

NEW CUMBERLAND, W.Va. — On Wednesday, with little fanfare, a company held a public meeting in New Cumberland to discuss their plans for a new hydroelectric power plant.

If you missed it, you weren't the only one. There were five people in the room; three were there to learn and two were there to talk about a project that is in the very early stages. "What we are proposing is a hydroelectric power plant of about 50 megawatts. It would provide energy to approximately 22,000 homes," said Andrew Blystra, Rye Development engineer.

Rye Development has completed preliminary studies and now they are eyeing space along the Ohio River. Their plan is to build the hydro power facility south of the New Cumberland locks and dam.



"The stated goal of the company is to develop hydro projects at all existing dams---hydro power plants renewable energy at existing dams," Blystra said. Company officials say the facility will be operational in the next five to six years. The total investment, per officials, would be somewhere in the neighborhood of \$150 million. The project would create 150 to 200 construction jobs and 2 or 3 operational jobs. "There's a lot of other things that are happening. For example, trash racks have to be raked. Some of it has to go to landfills and we would have a contract with a local entity to do that. Similarly, with snow plowing so there are a number of maintenance and operation requirements beyond the two or three people that would operate the plant," Blystra said. There will be a 60-day comment period for members of the public to provide feedback. That feedback will then be taken back to members of the Federal Energy Regulatory Commission.

(Why aren't we doing this?)

World's First Wind-Hydro Farm Supplies Power Even When There's No Wind

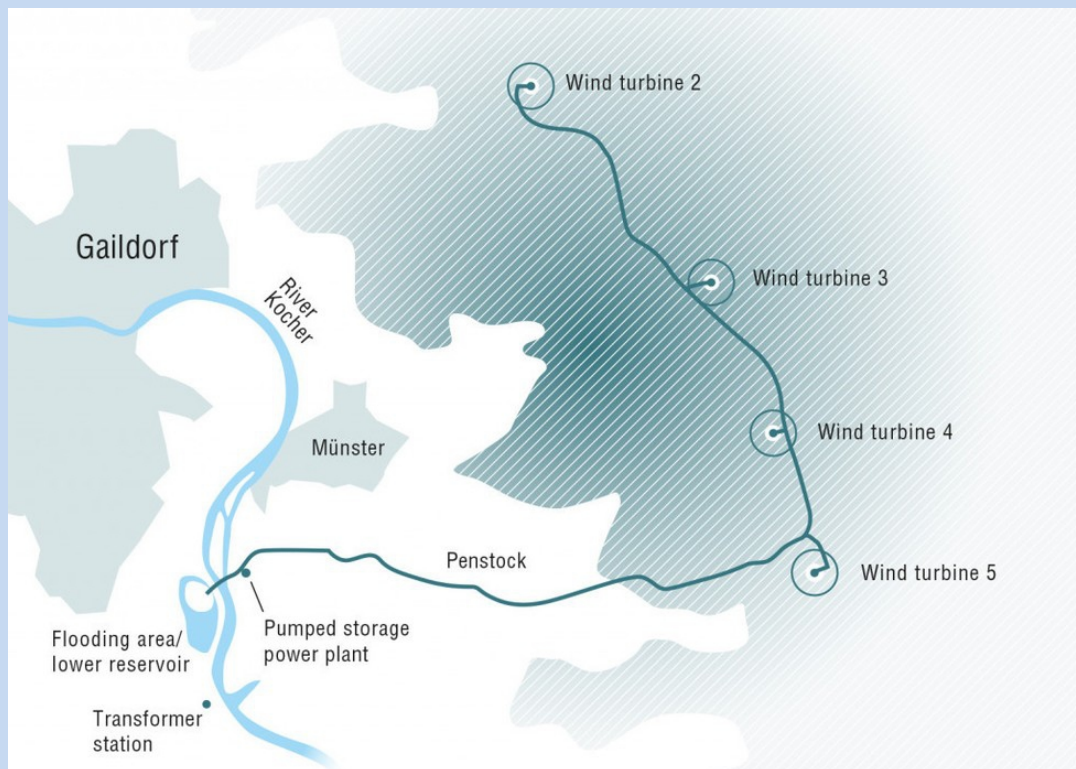
By Lorraine Chow, Oct. 20, 2016, ecowatch.com

Germany will soon be home to a groundbreaking wind farm that solves a big problem with wind power: What happens when the wind isn't blowing?

General Electric's (GE) renewable energy arm has signed a turbine-supply agreement with German construction company Max Bögl to develop the world's first wind farm with an integrated hydropower plant capable of generating power even when there's no breeze. According to GE Reports, project "Gaildorf" consists of four wind turbines scattered along a hill in the Swabian-Franconian Forest. These towers are unique in two ways. First, they will stand at a record-breaking height of 584 feet once built. Second, at the base of each tower is a water reservoir containing 1.6 million gallons of water. The four towers are daisy chained by a channel that takes water down a valley to a 16-megawatt pump/generator hydropower plant. The site will house another reservoir holding 9 million gallons of water for additional water storage.



Here's how it all works, as GE Reports simply explains:



"The big idea here is that the wind will generate electricity when it's, well, windy, and the water will act as a giant battery that will discharge and modulate output when it stops blowing. "When electricity is needed, water flowing downhill from the reservoirs will power the hydro plant. When the energy supply is high, the hydro plant will pump the water back up the hill to the reservoirs and will act as the giant battery." The four wind turbines are connected by a channel that takes water down to a hydro plant. GE Reports **The beauty of this project is that stored hydropower can offset the unpredictability of wind power.** "The Gaildorf project marks a major step forward in balancing power demand and supply fluctuations using renewable energy sources," GE said in a

statement. "The combined wind and hydropower plant will provide balancing power for fast-response stabilization of the grid, maintaining a low cost of electricity for residents in Germany." The wind farm alone will generate 13.6 megawatts of energy while the hydropower plant can generate 16 megawatts. The turbines are scheduled to be commissioned by the end of 2017. The Gaildorf project is expected to be fully operational by the end of 2018. "We are very excited to collaborate with Max Bögl on this pilot project; a first for the industry," Anne McEntee, president and CEO of GE's Onshore Wind business, said. "We are committed to exploring innovative renewable energy technologies that have the potential to improve grid flexibility in Europe and around the world." As GE Reports noted, this innovative plant will help Germany move toward its goal of generating at least 45 percent of its energy from renewables by 2030.

(They just aren't giving up.)

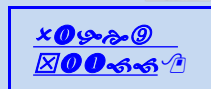
NC Challenges Alcoa's New License For Yadkin Dams

By DAVID BORAKS • 10/25/16, wfae.org

The battle over hydroelectric dams on the Yadkin River is about to go another round. The state of North Carolina asked the Federal Energy Regulatory Commission Monday to reconsider approval of Alcoa Inc.'s dam operating license. FERC approved the new 39-year license on Sept. 22. The previous license expired in 2008 and Alcoa had been operating under 1-year permits since. The series of dams stretches from Davie County south to Stanly County, east of Charlotte. They once powered Alcoa's aluminum smelter in Badin, which had 1,000 employees.



In its request for a rehearing, the state argues that the new license isn't in the public interest. It says the commission failed to consider that the smelting operation has been shrinking for years, and has been completely shut since 2010. That violates a promise Alcoa made when it won its initial operating license in 1958, to maintain employment at the site, the state says. The company now sells the electricity to other customers, which the state argues is a major change since Alcoa first applied for the new license in 2006. "The Commission has taken the erroneous position that Alcoa Power's decision where to sell project power is not a relevant issue," the state wrote in its appeal. The state also questions whether it was appropriate for FERC to approve the new license while Alcoa is in the midst of selling the project. Alcoa announced a deal in July to sell the dams to Cube Hydro Partners of Maryland. North Carolina's opposition to the relicensing is part of a wider dispute over Alcoa's dam operations. State officials have a long-running legal dispute with Alcoa, challenging its claim to ownership of the riverbed near the dams. A federal court last fall ruled in favor of Alcoa, but the state has appealed. The case is now pending at the Fourth Circuit Court of Appeals, where oral arguments are scheduled Thursday morning.



Other Stuff:

(It's even getting dangerous to play golf.)

A terrifying 6-foot python invaded PGA Tour course

By Charles Curtis , USA TODAY, October 21, 2016, usatoday.com



You've seen your share of alligators on golf courses in the United States, so let's head over to Malaysia, where the PGA Tour stops for this week's CIMB Classic ... and where a python decided to make a cameo:

YIKES! Σ

A 6-foot python was spotted on the golf course before Round 2. pic.twitter.com/CbnkbOPdRh
— PGA TOUR (@PGATOUR) October 21, 2016
GAH! The golfers had nothing to fear, however, thanks to these guys:

(Cost a bundle. Installed capacity is 1,150 MW. That's over 4,000 \$/kW.)

US Has New Nuclear Reactor for 1st Time in 20 Years

It's the 100th commercial nuclear reactor in the US

By Michael Harthorne, Newser Staff, Oct 21, 2016, newser.com

(NEWSER) – The first commercial nuclear reactor of the 21st century—and the first in 20 years—was officially declared complete Wednesday in Tennessee, the AP reports. According to CNN, the Tennessee Valley Authority started work on the Watts Bar Nuclear Plant in 1973. The first reactor didn't open until 1996. The completion of the second reactor this week wraps up a 43-year project. "If you're in the nuclear business, the sight behind me is a lovely sight," TVA president Bill Johnson says. It took nine years and \$4.7 billion to build the second reactor, WRCB reports. The project was over budget by billions. A nuclear engineer tells the Chattanooga Times Free Press that finishing the Watts Bar Nuclear Plant was the "most difficult, complex project I've ever worked on."



The new reactor is expected to provide electricity for at least 40 years and generates enough power for 650,000 homes. It's the 100th commercial reactor in the country. US Sen. Lamar Alexander says the reactor "will provide cheap, carbon-free, and reliable electricity." Alexander wants another 100 nuclear reactors in the US. But TVA, which now has seven nuclear reactors, says it has no plans to build more after the completion of Watts Bar.

(Rare and probably once-in-a-lifetime.)

People Are Freaking Out About 2017 Solar Eclipse

It's predicted to be a once-in-a-lifetime event

By Arden Dier, Newser Staff, Oct 22, 2016, newser.com

(NEWSER) – It's still 10 months away, but sky gazers are already bursting with excitement—and booking vacations—over what is predicted to be "one of the most spectacular and widely accessible solar shows of our lifetime," per Mother Nature Network. On Aug. 21, 2017, the US will be treated to a total solar eclipse, which is special for a couple of reasons: It's the first in the continental US since 1979. But whereas the 1979 eclipse was visible only to a relative handful of people, the 2017 version will be the first in 99 years to cross the country, from Oregon to South Carolina, meaning many more eyes will have the opportunity to catch it, reports the Washington Post. See an interactive map here, and be warned: Plan now if you'll need to travel for it.



"It's not too early, we promise," note the post at MNN. Camp sites on the route already are booking up, and you can expect the same of hotels as the big day approaches. As for the event

itself: "The sun will disappear for about 2.5 minutes, beginning in Oregon about 10:15am local time," notes the Post, and viewers in South Carolina will get the last glimpse about 90 minutes later. Don't live in Salem, Ore.; Casper, Wyo.; Columbia, SC; or anywhere else on the "totality" path? Don't fret: Live streams will be available and a partial eclipse will be visible in other parts of the country. To make the most of the day, though, you can travel to one of several events, per Astronomy, or book a spot on a tour bus.



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