Dams: (They’re everywhere.)

Inspector general: 2 US dams at risk of ‘insider threats’
By THE ASSOCIATED PRESS, June 12, 2018, by KATHLEEN RONAYNE, mercurynews.com

SACRAMENTO, CA — Two dams critical to U.S. national security are at high risk for “insider threats” that could impair operations because of poor computer security practices such as too many employees having access to administrator accounts and failures to routinely change passwords, according to a new inspector general report. An evaluation released Monday by the U.S. Department of the Interior doesn’t name the two dams, and spokeswoman Nancy DiPaolo cited national security concerns. But they are...
among five dams operated by the U.S. Bureau of Reclamation that are considered “critical infrastructure,” meaning their destruction or impairment could hurt national security. Those five dams are Shasta and Folsom Dams in California, Glen Canyon Dam in Arizona, Grand Coulee Dam in Washington and Hoover Dam, which straddles Nevada and Arizona.

The United States and other countries have accused Russian hackers of trying to infiltrate critical infrastructure such as power plants, elevating the sensitivity around making sure U.S. systems are secure. The inspector general’s report found the two dams are at low-risk of outside cyber infiltration — but at high risk of threats from within. They’re run remotely through a computer system that controls generators, valves and gates at the dams from a U.S. Bureau of Reclamation operations center. The agency disputed some of the findings. Among the factors cited as security risks: Too many people have access to administrative accounts, employees aren’t changing their passwords often enough, account access isn’t always revoked when employees leave, and the agency isn’t conducting robust enough background checks for employees with high-level privileges. For example, the evaluation found nine of 30 administrator accounts hadn’t been used in more than a year. The report characterized the issues as “significant control weaknesses that could be exploited by insiders.”

Administrative access would give an employee the ability to compromise the system by installing malware to disrupt dam operations, installing back-door access for others, deleting or modifying crucial programs, revoking access for others and deleting or modifying control logs to “conceal malicious activity,” according to the report. The inspector general offered five recommendations, including eliminating the use of group accounts that allow multiple workers access and conducting more rigorous background checks on certain employees. The U.S. Bureau of Reclamation disputed several of the findings. It said the number of people with privileged administrative access is necessary to provide 24/7 support to the dams and that system administrators are required to log their use of group accounts. The bureau said it follows federal guidelines for conducting background checks. The inspector general conducted interviews with operations center and dam staff in April 2017.

(That’s a tidy sum.)

**DiNAPOLI: $360 MILLION NEEDED TO REPAIR LOCAL DAMS**

*Report Reveals Large Number of Locally-Owned Dams Considered Unsound or Deficiently Maintained*

Municipalities across New York are facing an estimated $360 million price tag to fix locally-owned dams that are considered a high- or intermediate-hazard to public safety, according to a report issued today by New York State Comptroller Thomas P. DiNapoli.

The report showed that New York has more than 1,000 intermediate- and high-hazard dams, nearly 400 of which are owned or co-owned by local governments. There are a total of 5,352 functioning dams in the state, with 861 of those owned or co-owned by local governments. “The deadly and destructive consequences of flooding in New York are clear,” said DiNapoli. “As with the impact of severe storms, the breach of a large dam could result in the loss of life, devastation of several communities and flooding that spans multiple counties. Even a small dam failure could result in significant economic consequences for residents, municipalities and the state. With increased danger due to aging infrastructure, weather events triggered by global warming and the threat of cyberattacks, effective prioritization of funding and better oversight of critical capital assets is essential.”
The New York State Department of Environmental Conservation (DEC) classifies dams according to the level of risk that a failure would pose to life and property. Under DEC’s classifications, there are 407 high-hazard dams in New York, more than half of which (213) are owned or co-owned by local governments; and 597 intermediate-hazard dams, of which 30 percent (179) are owned or co-owned by local governments.

In the wake of a 2008 audit of DEC’s dam safety program by DiNapoli’s office, DEC strengthened its dam safety regulations. The new regulations, which took effect in 2009, include a requirement that most owners of high-hazard and intermediate-hazard dams have an engineering assessment (EA) conducted at least every 10 years and submit the report to DEC. If the dam has no recent EA or if the information in the EA is incomplete or otherwise insufficient to determine a condition rating, then DEC will either not assign a rating, or assign a condition rating of “unsound” based on lack of information. The ratings range from “unsafe,” meaning that it poses a threat of imminent failure, to “no deficiencies noted.”

No New York dams are rated “unsafe.” However, a majority do not have a condition rating at all, according to DiNapoli’s report. Only 37 percent of high-hazard dams owned by local governments have a condition rating and just 23 percent of intermediate-hazard structures have one. Out of the 79 high-hazard dams owned by local governments with condition ratings, more than half (58 percent) are rated as either unsound or deficiently maintained. Most of the 42 local government-owned intermediate-hazard dams with condition ratings are classified as unsound (81 percent, or 34 dams). Dams considered “unsound” may have seepage problems, structural stability inadequacies or seriously inadequate spillway capacity. Dams rated as “deficiently maintained” are in need of corrective action, often in the form of increased maintenance, to correct the condition of the dam.

The Association of State Dam Safety Officials estimates the cost for these types of repairs in New York at $360 million. But this estimate could be low given that the recent reconstruction of the Gilboa Dam in Schoharie County, which was completed in 2014, alone cost $138 million. The total estimate excludes the 4,491 other dams that are owned by the federal government, New York state or are privately owned. In the report, DiNapoli recommended that local officials:

• Ensure emergency action plans and annual certifications are adequate and up to date, and take prompt action to address deficiencies identified by inspections and engineering assessments.
• Include dams in capital asset planning and establish long-term financial forecasts for dam maintenance and, if necessary, rehabilitation.
• Raise awareness about dams that could affect residents. In addition to their own dams, local officials also need to know about other intermediate- and high-hazard dams that could affect their residents and businesses.


(Making it stronger.)

**Berm construction project boosts embankment at Kentucky Dam**

By DAVID ZOELLER, paducahsun.com, 6/16/18

GILBERTSVILLE -- A Tennessee Valley Authority construction project currently underway to bolster the western earthen embankment of Kentucky Dam should be completed in about a month. Mike Morrison, TVA senior program manager, dam safety, provided an update Friday on construction of a berm - made of sand, gravel and stones -- on the downstream slope of the dam. "We're putting it in to..."
improve the performance of the dam, particularly in the event of a seismic event,” Morrison said. “Because when you have seismic events bad things can happen to earthen structures. “With this berm in place, we're assured of continued operation of the dam even in the most extreme seismic situations.” The completed berm will be about 400 feet long and 10 feet high. The cost of the project is estimated between $800,000 and $1 million. Construction should be completed in mid-July, according to Morrison.

"This project has been the result of studies that began in 2012," he said. "At that time TVA identified five facilities within the valley that we felt required additional seismic studies: this one, Pickwick (in Hardin County, Tennessee) and three other dams on the east side of the valley." One of the factors that went into selecting Kentucky Dam for the berm project was its proximity to the New Madrid Fault, according to Morrison. "There's absolutely nothing wrong with the dam," Morrison said. "The dam has functioned very well for us. This is a project that was born out of TVA's desire for continuous improvement in the performance of this facility." In addition construction of the berm, efforts will also be made to improve downstream surface drainage, according to Morrison. The construction is not expected to affect highway or boating traffic.

(Save the sea lions.)
Don’t kill sea lions to save fish. Remove dams instead.
washingtonpost.com, 6/12/18

The June 12 Politics & the Nation article “Oregon’s plan to save endangered fish is to kill a protected species: sea lions” missed the elephant in the room: Dam projects have drastically changed the ecosystem in that area. The declining fish numbers have more to do with the effect the dams have had on the important life stages and habitats of migrating fish. Poor mitigation of the dams’ impact on these fish, along with poor fisheries management, also has a significant effect. The issue with sea lions is just a symptom and not the actual problem. Culling sea lions won’t save the fish; only removal of the dams will do that. Chris Parsons, Fairfax,] The writer is a marine conservation scientist specializing in marine mammal conservation.

(Will it or, won’t it fail?)
Residents, officials worry worn dam could soon burst
By Associated Press | Jun 17, 2018, ktuu.com

LARSEN BAY, Alaska (AP) - Residents and local officials are worried that an Alaska dam may be in danger of bursting. The Kodiak Daily Mirror reports State Rep. Louise Stutes said last week that the dam in Larsen Bay is "in dire straits." City employee Bill Nelson says the dam is experiencing erosion of its concrete intake structure - the channel that controls water flow. Nelson says their pleas for help with the dam have gone unanswered, and the spillway is increasingly unable to effectively manage the load. Nelson says repairs should begin as soon as possible to avert catastrophe and avoid even more expensive problems in the future. The Alaska Energy Authority built the plant in the late 1980s. It provides electricity for the town of 86 residents, as well as 70 percent of the town's potable water.
The choice for the Dock Street dam is simple. Fix it or remove it | Editorial
Kayaker killed on Susquehanna River in Harrisburg
By PennLive Editorial Board, pennlive.com, 6/18/18

Twenty-nine. That's the bare minimum of people who have lost their lives at Harrisburg's Dock Street Dam since 1935. Some didn't know that the low-head dam existed until it was too late. Some underestimated the power of its violent churning waters. Some were sucked into its grasp when their boats ran out of gas or suffered mechanical problems. At least nine who have lost their lives at the dam have been children or teenagers. That includes a three-year-old girl who perished there last month, along with her young mother. Because of their engineering and brutal efficiency at trapping hapless boaters and others, the dams are known as 'drowning machines.'

Shockingly, as PennLive's Christine Vendel reports, city emergency services officials didn't even bother tracking the fatalities at the city-owned dam. A PennLive investigation, perhaps the first of its kind for Harrisburg, also found 28 additional near-drownings. The deaths are tragedy enough. Survivors are sometimes doomed to a lifetime of suffering. Such was the case of Malcolm Logan, who was 10 years old in 1996, and who suffered severe brain damage after being trapped under a boat at the dam. He spent 16 years in a comatose state, dying at age 26, after spending most of his life unable to move or talk. The deaths, and near-fatalities, have come despite a decades-old state law requiring warning signs at these so-called 'low-head' dams. Pennsylvania has more than 3,000 of them and the worst fatality tally in the nation, according to an investigation by the York Daily Record.

One thing is certain, unless city and state officials act, even more people will die, John Fletemeyer, an expert from Fort Lauderdale who has examined more than 1,000 drowning deaths in his career, told Vendel. Officials have two choices: To remove the dam outright, which has been the state's preference in most cases. The state leads the nation, in fact, in the number of dam removals, according to a report by The Allegheny Front. Or authorities can follow the path of officials in Minnesota, who have found an innovative, and environmentally friendly, way to take care of these clear hazards.

The approach, pioneered by Luther Aadland of the Minnesota Department of Natural Resources, calls for deploying boulders, rocks and smaller stones downstream of the dam wall. These so-called "rock ramps" break up the deadly hydraulic flow of the drowning machines.
When they're implemented, these structures end up looking like natural rapids, removing the risk of the low-head dams. As an added benefit, these structures allow fish to migrate upstream, improving the local ecosystem, according to a 2011 report by The Journal of Dam Safety.

(Keeping tabs on a lot of dams.)

**Inspectors keep tabs on 20 to 30 'high hazard' dams in Truckee Meadows**

By Melissa Matheney, June 19th 2018, mynews4.com

RENO, Nev. (News 4 & Fox 11) — Inspectors say 20 to 30 dams in the Truckee Meadows are categorized as "high hazard." The "high hazard" rating means if they were to breach, there would be catastrophic damage that could result in severe flooding. Inspectors say they examine the dams at least once a year for cracks, holes and seeping water.

"We like to see them in different weather conditions. We like to see them when they're full and when their dry. So we mix up when we go to the dams," said Nevada Dam Safety Manager Eddy Quaglieri. Quaglieri says their recent inspections have revealed the dams are in satisfactory condition and that the damage they discovered at the Washoe Lake Dam on Monday was out of the ordinary. "It was a complete surprise to all of us," said Quaglieri. Repairs and maintenance could become costly on some of the biggest reservoirs in Northern Nevada and California.

The Bureau of Reclamation maintains dams at Tahoe, Prosser, Boca, Stampede and Lahontan reservoirs. A spokesperson says the work on the dams is constant. "There's not really a pass or a fail, it's what do we have to do? What do we see that needs to be fixed," said Scott Schoenfeld with the Bureau of Reclamation. Current maintenance and repairs at Boca and Reservoir dams could top $50 million. The Boca Reservoir dam is getting reinforced so it would withstand earthquakes. The Stampede Reservoir dam will be raised more than 11 feet. Officials say the repairs and maintenance is worth it; if the dams at Boca and Stampede reservoir were to fail, it could be catastrophic. "There would be a major flood downstream that could potentially cause deaths to the community if they didn't get out of the way," Schoenfeld.

(Loss of life and Dam failure, too much rain.)

**Wis. storms blamed for second death**

Douglas County Emergency Management Director Keith Kesler says he's unaware of any evacuations from the damage Monday.

ASHLAND, Wis. (AP) - Authorities are attributing another death in Wisconsin to the storms that caused widespread flooding in the Upper Midwest. The Sawyer County Sheriff's Office says severe thunderstorms toppled a large oak tree onto a camper on Lake Chetac, killing a man inside and injuring a woman and two young children Sunday. Sheriff's officials identify the victim as 55-year-old James Pluff, of Redwood Falls, Minnesota. They say the woman and children suffered non-life threatening injuries and were taken to a hospital in Rice Lake. Storms and flooding also caused the death of a 75-year-old man whose body was found not far from his pickup truck along a flooded road in Ashland County Sunday.
Those same storms and heavy rains have caused an earthen dam to fail in a rural area of northwestern Wisconsin. Douglas County Emergency Management Director Keith Kesler says he's unaware of any evacuations from the damage Monday. Few people live in the area. Kesler says water is overtopping the Radigan Flowage Dam west of Dairylan after several days of rain. The National Weather Service says local law enforcement is reporting that the damage is causing flooding downstream on the Tamarack River, as the water flows toward the St. Croix River between Wisconsin and Minnesota.

Flash flooding could affect roads and highways in the area. A state of emergency has been declared in Ashland, Bayfield, Burnett, Douglas, and Iron counties in northwest Wisconsin. At least one person has died as a result of the flooding.

(Guess they think everything is OK.)

**Flood watch canceled; threat of Nevada dam failure subsides**

By SCOTT SONNER, Associated Press, Jun 19, 2018, heraldcourier.com

RENO, Nev. (AP) — Emergency managers and weather forecasters canceled a flood watch south of Reno on Tuesday after crews made critical repairs to a small, century-and-a-half-old earthen dam that was leaking and raising concerns about potential failure. "Mitigation efforts have reduced the hazard of a potential breach in the dam at Little Washoe Lake," the National Weather Service said Tuesday. Nevada Dam Safety manager Eddy Quaglieri confirmed there's no longer any immediate concern about the dam's structural integrity. Crews filled a hole with dirt and rocks and fortified the structure built in 1863 with boulders. New concrete will be added once the section of the structure that was leaking dries out. No rain is in the forecast into next week.

Washoe County Emergency Management officials issued a flood warning Monday and told area residents to be prepared to evacuate after a fisherman reported seepage earlier in the day at the dam between Reno and Carson City.

State officials said as many as 100 residents along Steamboat Creek and Steamboat Ditch could have been affected in the high desert area along U.S. Highway 395. But the warning was downgraded to a watch Monday night and the flood watch expired at 10 a.m. Tuesday. "There was a seep coming through. It wasn't moving a lot of material out, but we were concerned about its structural integrity," Quaglieri said. The privately owned dam was retrofitted in 2012 and most recently was inspected last August, when no problems were detected, he said. Officials said if the dam had failed, it likely would have produced minor to moderate flood conditions similar to levels reached in January and February 2017. "About 100 residents would see some level of water on their property if it got to the level of February 2017," Quaglieri said. "There are some low bridge crossings in the area, so we were worried about those." "But we feel a lot better about the amount of water coming out of this. It has decreased significantly," he said. "They are still monitoring the situation so it is not over yet. But (residents) can relax for the moment. There's no immediate threat of failure." Louis G. Damonte Jr., director of the company that owns and operates the dam, said he and others rallied workers to the site Monday as soon as they learned of the problem. "We don't know what caused this," Damonte told the Reno Gazette Journal.
"What is important to note on our part is the protocol and how fast we were able to move equipment in here."

Hydro: (The price of regulation.)

Hydroelectric Hearing Highlights Costs of Federal Permitting Delays
By Ben Lieberman • June 10, 2018, cei.org/blog

The House Energy and Commerce Committee’s subcommittee on energy held a hearing on 7th June on energy infrastructure licensing reform. Although Improving the Hydropower Licensing Process focused only on hydroelectric projects, the issues it highlighted are relevant to the challenges facing many kinds of infrastructure projects and lend support to efforts to streamline the federal approval process. The five federal agency witnesses at the hearing—FERC, EPA, Army Corps of Engineers, NOAA, and Fish and Wildlife Service—all have a hand in hydroelectric approvals and are indicative of the complexities in the process. Hydro ought to be the low-hanging fruit for federal energy approvals—a cheap, clean, and abundant source of baseload power that does not need government subsidies to grow. Nonetheless, even the relicensing of existing hydroelectric dams or approvals to electrify non-hydroelectric dams can and sometimes do drag on for a decade or more. This has a chilling effect on investment in hydro projects relative to wind and solar, which benefit both from less red tape and heavy subsidies.

The Trump administration’s Executive Order 13807 should, if properly implemented, go a long way towards addressing these concerns. It requires One Federal Decision (OFD) for major infrastructure projects, designates a lead agency (which for hydro would be FERC), and puts all participating agencies on a strict timetable to perform their statutory duties. This would limit the ability of a single agency to hold a project hostage, for example EPA under the 404(c) permit requirement for discharge of dredge or fill material. In addition to administrative remedies, the House has passed legislative reforms applicable to the approval process for hydroelectric projects. Both administrative and legislative changes will be needed. A streamlined and reasonable federal approval process applicable to private sector projects of all types could serve as President Trump’s stimulus package. And unlike the Obama stimulus package, it won’t cost taxpayers a dime and might actually work.

(They must like torture.)

Rocky Mountain Power requests renewal of operating license for Weber hydroelectric project
June 13, 2018, by Kevin Randolph, dailyenergyinsider.com

Rocky Mountain Power recently submitted its application to the Federal Energy Regulatory Commission (FERC) to renew its federal operating license for the Weber hydroelectric project, a 3.85 megawatt (MW) run-of-the-river project in Utah. The final license application includes a series of project environmental improvements, proposed mitigation measures and operational refinements and is the product of a consultation process that began in
March 2015. "This application represents the cooperative effort of Rocky Mountain Power, state and federal agencies, and recreational, fishing and other public interest organizations," Eve Davies, Weber relicensing project manager for Rocky Mountain Power, said. "Their hard work, important suggestions, and review produced an application that satisfies the multiple-use considerations required by the federal licensing process. We’re grateful for their involvement and input."

The license application proposes the continued operation of the plant as a run-of-the-river project with no significant water storage. Operating agreements in the current license and included in the proposed new license ensure a minimum flow of at least 34 to 50 cubic-feet-per-second in the river, depending on the season and annual runoff forecasts. The application also includes several protection, mitigation, and enhancement measures, including the construction of a fish ladder, a preliminary agreement to provide potential whitewater boating flows in the project reach, for four-hour periods on four Saturdays each year; the construction of a year-round picnic site and improvement of two existing pedestrian trails. The Weber hydroelectric project is located on the Weber River near the mouth of Weber Canyon approximately nine miles southeast of City of Ogden, Utah. It has a capacity of 3.85 MW and average annual generation of 16,926 megawatt-hours. A predecessor company of Rocky Mountain Power completed construction of the facility in 1910. The first federal license was issued in 1938 and was renewed in 1970 and 1990.

(Why does it take so long?)

Third Dam rehab: After years of federal permitting, Logan nearly ready to begin project
By Sean Dolan, staff writer, 6/16/18, hjnews.com

For years, Logan, Utah has navigated myriad government agencies and federal laws in order to begin the multimillion-dollar project to rehabilitate the aging Third Dam hydroelectric project in Logan Canyon. It’s a tangled web of jurisdiction and regulation. Logan city owns the hydroelectric generation equipment, but the U.S. Forest Service manages the land and the Federal Energy Regulatory Commission, or FERC, regulates the dam. The U.S. Fish and Wildlife Service has worked with those entities to evaluate potential impacts to threatened and endangered species under the Endangered Species Act and the Utah Department of Environmental Quality has certified that the project doesn’t violate the Clean Water Act. On top of that, Logan has consulted the Utah State Historic Preservation Office to follow the National Historic Preservation Act. There are a lot of moving parts, to say the least. Logan Light and Power Director Mark Montgomery said he’s been working on federal permitting for Third Dam since he took the job six years ago. Now the first phase of the project, which Montgomery said the city contracted out at $6.2 million, could begin in a matter of weeks.

Third Dam has been owned and operated by Logan city since 1901 and some of the equipment is obsolete. There’s a long list of items that need to be replaced or resurfaced, including the spillway, intake structure, hoist house, crest gates, stilling basin and sluice gate. "The whole system needs to be redone," Montgomery said. Before any work can begin, however, Logan needs to send some information over to FERC. On June 7, FERC sent a letter to Logan informing Montgomery that the city is “not authorized to proceed with construction until all of our comments have been satisfactorily addressed." The June 7 letter makes 15 comments, or requests for additional information, to be received within 30 days. Montgomery responded with a letter on June 13 responding to three of those comments, but he still has a few more bureaucratic hoops to jump through. "Until we receive that, which is due in July, they can’t move forward," FERC Spokesperson Celeste Miller told The Herald Journal this week.
Once Logan has the green light, the first step is to work on some improvements at the Third Dam surge tank, which is actually located across the highway just north of Second Dam. That work will take place from June to August, according to public documents on the FERC website. But any construction work that would remove vegetation at Third Dam cannot begin until September. George Weekley, fisheries biologists for the U.S. Fish and Wildlife Service’s Utah Ecological Services Field Office, said the project area includes suitable habitat for the threatened yellow-billed cuckoo, which nests between June 1 and Aug. 31. “Logan Canyon has the potential to be occupied habitat for several threatened and endangered species,” Weekley said. Once the Third Dam rehabilitation work begins in September, Jennefer Parker, Logan District Ranger for the U.S. Forest Service, said there will be a few impacts to camping and tourism. She said U.S. Highway 89 through that part of the canyon will go down to one lane, and the Gus Lind campsite will close during construction, which is expected to last until May 2019. Parker said Logan and the U.S. Forest Service are planning to conduct a public open house sometime late this summer to inform people of the potential impacts. A date for the open house has not been set. The first phase of the project may have an expected completion date of May 2019, but Montgomery said there is more to be done after that. He said the Third Dam reservoir needs to be dredged in the coming years.

“If you go back to satellite photos several years ago you can see an actual pond and now all you can see is cattails,” Montgomery said. “So it’s filled up with silt, and plants have grown in it.” To be fair, Montgomery said, that’s what the reservoir is supposed to do. It’s intended to act as a diversion to the power plant and prevent sediment from going through the generation equipment. But at some point it needs to be cleaned up with hydraulic suction dredging. “It’s trapped a lot of sediment, and it’s full,” Montgomery said. “We need to empty it.” After six years of working through the arduous and complicated federal permitting process, Montgomery will soon be able to see some progress at Third Dam. But the work is never done. The Logan Light and Power Department, with a budget of $36 million, has plenty of other projects coming down the pipeline, like building a new substation on the southern part of Logan, replacing deteriorating transformers and building a new warehouse.

(New hydro thinking. Pumped storage.)

Hydropower project along Missouri River for region takes first step
By Marcus Traxler, Jun 18, 2018, dglobe.com

BURKE, S.D. — In the first step of what could be a decades-long project, a preliminary permit in Gregory County has been filed with the Federal Energy Regulatory Commission to study building a hydropower project along the Missouri River. The project is currently in the midst of a 60-day comment period. If approved, it would allow the applicants from the Western Minnesota Municipal Power Agency three years to study the site for a potential hydropower generation plant. The WMMPA, a municipal corporation based in Ortonville, Minn., has filed the permit. It finances the construction and acquisition of generation and transmission facilities for members of Missouri River Energy Services, based in Sioux Falls, which provides energy to a number of municipalities in South Dakota, North Dakota, Minnesota and Iowa.

An application filed in April says a detailed feasibility study will be conducted to finalize the technical features of the project and confirm the project’s economic viability. The project is also intended to evaluate the best arrangements for configuring the equipment. Missouri River Energy Services Manager of Generation Resources Brent Moeller said the permit is to allow more research to be done and to reserve the site for that work. The site would be in south-central South Dakota. The proposed project calls for an open-loop pump storage project, with an upper
reservoir, which will cover 1,350 acres and be constructed by a 62-foot-high earthen levee. An open-loop project is one that is connected to a naturally flowing water feature, which in this case is Lake Francis Case and the Missouri River, the lower reservoir in this case. An underground powerhouse would be located more than 600 feet below the river level, Moeller said.

During low demand periods, water would be pumped up the side of the river bluffs — about 700 feet — to the levee reservoir. During high demand periods, the water would flow back down to the pumps and turbines and would be generated into electricity. The power plant could be tied into the region's wind farms, which would allow the water to be pumped uphill during low demand times, while the water flowing downhill through the turbine would create electricity during high-demand periods, or when wind production is lower. Moeller made the comparison to how a battery functions. “For this to get any wheels to go anywhere, we would have to get the energy out of the region and to people,” Moeller said. “Right now, it’s just a concept at this stage. There will have to be a substation at some place where all this will come together and currently, the area doesn't have the transmission buildout to support it.”

Water:
(Drought in Alaska, who’d have thunk?

Southeast Alaska dries up in rare problem: a drought
Fisheries, drinking water, hydropower all affected
June 13, 2018, by JAMES BROOKS, Juneau Empire, juneauempire.com

If it sounds unusual to have a drought in a rainforest, it is. Low snow and little rain combined to deliver an almost unprecedented drought to southern Southeast Alaska over the winter and spring, officials with the National Weather Service said in a Tuesday teleconference. Given Southeast Alaska’s profligate use of water — for hydroelectric dams, drinking water reservoirs, fisheries, fish processing and more — anything less than normal can have widespread consequences. "This was the most significant drought in the wet season in Southeast Alaska in 40-plus years," said Aaron Jacobs, a hydrologist with the Weather Service office in Juneau. Rick Thoman, a climate specialist for the National Weather Service in Alaska, said last winter's conditions were unusual enough that the Weather Service has struggled to determine what constitutes a drought here. "This is something that we haven't thought of a lot in Alaska, at least on the Weather Service side," he said.

The last significant Southeast drought — official declarations come from the U.S. Department of Agriculture, the University of Nebraska, and the National Weather Service — came in the dry spring season of 1989 and didn’t have as much of an effect because winter snowmelt made up a gap in rainfall. Droughts are determined by a handful of characteristics, but one of the key markers is how much precipitation (rain and melted snow) is expected to fall in a given period and how much actually arrives. According to Weather Service measurements, Ketchikan received 11.21 inches of precipitation in October and 7.59 inches in November, less than half its normal tally for the rainiest months of the year in the First City. "It's all relative to normal," Jacobs said by phone after the teleconference. "Eleven inches (of precipitation) in a month? That's a year’s worth for Fairbanks, but that is below normal for
Ketchikan in the wet season.” More rain fell in December and January, but February and March were drier again. In April and afterward, conditions have come closer to normal but haven’t fully resolved the deficit. Since Oct. 1, Ketchikan has had 82 percent of its normal precipitation. That city isn’t alone: Sitka and Haines are each running about 30 percent short of average. (Juneau is almost exactly average.) The drought was mostly quenched in late April and early May, but Southeast Alaska remains unusually dry overall.

At its peak, the drought had its biggest effects in Wrangell, which enforced water restrictions on residents, and Ketchikan, where the Swan Lake hydroelectric plant had to stop producing power because its reservoir was so low. On Prince of Wales Island, the hydroelectric plant at Black Bear Lake encountered the same problem. Mark McCready, a spokesman for Alaska Electric Power and Telephone, which operates the hydroelectric plant there, confirmed the shutdown by phone. He added that it will have knock-on effects for customers as well. “I know we have burned a lot more diesel in the first quarter than we had hoped to,” he said, referring to the need for backup generators. Diesel costs more than hydroelectric power, and customers there will see higher electric bills. Jacobs said attention now is focusing on the drought’s potential effects on fisheries. With less precipitation over the winter, the mountaintop snowpack is smaller. That means less water running downhill and downstream for returning salmon during the drier summer months. “That could have dire effects on fisheries,” he said, but the effects could be mitigated by enough rain at the right point in the summer. Asked whether Southeast Alaskans should be prepared for more winters like the one just passed, Thoman said it’s anyone’s guess. “We don’t know what the future holds.”
Klamath Falls, Ore. – Removal of the John C. Boyle Dam is likely to impact water quality on the Klamath River, according to the Oregon Department of Environmental Quality. The J.C. Boyle Dam southwest of Klamath Falls is one of four dams targeted for removal. The Oregon D.E.Q. held two meetings at Oregon Tech Tuesday to discuss possible environmental impacts of taking out the dam. “D.E.Q.’s role in this is to determine whether the project can proceed in a manner that meets state water quality standards.” Notes Chris Stine of the Oregon D.E.Q.

Stine adds that the release of sediment is expected to cause a short term lowering of water quality. “But we believe that there will be long term benefits and an improvement of water quality including a net ecological benefit once the project is done.” Mark Bransom of the Klamath River Renewal Corporation says the cost of removing all four dams won’t be known until the projects go out to bid. “We think the estimate is somewhere in the range of the amount of money that we have, somewhere under our budget of 450 million dollars.” The D.E.Q. report is one hurdle on the way to getting federal approval for dam removal. “We anticipate that we will begin significant site preparation and early construction activities in early 2020.” Stated Bransom. “And then physically remove the dams during 2021 and possibly into 2022.” The cost of removing all four dams will be covered through a surcharge on Oregon Pacific Power bills, and passage of a California bond measure.

(More studies. Yes, but what about the benefits they provide?)

Connecticut River Flow Study Shows Dams’ Ecosystem Effects

By ANNIE ROPEIK • 6/15/18, nhpr.org

A major study of the Connecticut River shows how its flow and ecosystem has been altered by dozens of dams. The nonprofit Nature Conservancy worked with the Army Corps of Engineers to try and reconstruct how the Connecticut River might flow if not for the more than 70 large dams in its watershed. "It's less about restoring natural flows completely and more about learning about the ecosystem from this theory and figuring out how we can apply that knowledge to improve the system," says Katie Kennedy, a scientist with the nonprofit. She says she hopes the study, which is the first of its scale, will help regulators and dam operators plan changes that could benefit the environment more without sacrificing power generation, flood control or water supply. "I really think that these models can help us find those sweet spots," Kennedy says. The analysis could also come into play as federal regulators weigh new long-term licenses for five hydropower facilities on the river in Massachusetts, New Hampshire and Vermont.
Other Stuff:
(Miscellaneous nonsense.)

Test your knowledge
By Andy Jones, davisenterprise.com, 6/9/18
1. Northern California Cities. Two cities sit on the shores of San Francisco Bay and San Pablo Bay simultaneously. Their names start with an R and an S. Name either city.
2. Know Your Acronyms. The USACE, which has a castle as its logo, provides 24 percent of U.S. hydropower capacity. What do the letters USACE stand for?
3. Science. The most abundant organic polymer on Earth starts with the letter C. What is it?
4. Unusual Words. Also starting with the letter C, what word refers to a concluding event, concluding remark or concluding section?
5. Another Music Question. According to the current hit song, who has “No Tears Left to Cry”?

Answers: Richmond or San Rafael, The U.S. Army Corps of Engineers, cellulose, coda, Ariana Grande.

— Dr. Andy Jones is the quizmaster at 7 p.m. Mondays at de Vere’s Irish Pub, 217 E St. in downtown Davis. He is the author of the new book “Pub Quizzes: Trivia for Smart People,” now available at The Avid Reader. Find out more at www.yourquizmaster.com.