**Dams:**
(Hate mine tailings dams because sometimes you’re building a dam form non-dam materials. Remember Buffalo Cr. In W. Virginia.)

**UNEP must act to avoid mine waste disasters**
By Shreema Mehta, August 31, 2015, earthworksaction.org

Despite an authoritative investigation uncovering the root causes of the Mount Polley failure and recommending steps needed to avoid more of them in the future, there have been several more mine waste spills since Mount Polley – three in Mexico alone. Photo credit: Common Dreams

One year ago in August, a mine waste dam failed. The breach sent 24.4 million cubic meters...
of a liquefied mixture of toxic heavy metals and other chemicals into the Fraser River watershed in British Columbia, Canada. To help prevent further toxic catastrophes, over 3 dozen environmental and social justice groups including Earthworks, Friends of the Earth, and Greenpeace sent a letter today to the United Nations Environment Programme urging the agency to call for global review and regulations to address threats posed by similar dams at existing and proposed mines around the world. As the global authority on environmental protection, UNEP can not only bring much-needed attention to this problem, but also develop international guidelines and assist countries to respond to this growing threat.

One year ago in August, a mine waste dam failed. The breach sent 24.4 million cubic meters of a liquefied mixture of toxic heavy metals and other chemicals into the Fraser River watershed in British Columbia, Canada. The Mount Polley disaster should have been a global wakeup call to address the safety and governance of mine waste dams. Instead, despite an authoritative investigation uncovering the root causes of the Mount Polley failure and recommending steps needed to avoid more of them in the future, there have been several more mine waste spills since Mount Polley – three in Mexico alone. To help prevent further toxic catastrophes, over 3 dozen environmental and social justice groups including Earthworks, Friends of the Earth, and Greenpeace sent a letter today to the United Nations Environment Programme urging the agency to call for global review and regulations to address threats posed by similar dams at existing and proposed mines around the world. As the global authority on environmental protection, UNEP can not only bring much-needed attention to this problem, but also develop international guidelines and assist countries to respond to this growing threat.

These disasters were preventable. In the case of Mount Polley, the government-commissioned independent investigative panel determined that the dam failed because of a faulty design that didn’t account for the instability of the glacial till on which it was constructed. The company’s storage of excess water and over-steepening of dam slopes complicated the failure. Government investigators of the Buenavista mine spill in Mexico last year also pointed to failures in management, including the absence of a valve that would have prevented the spill, as the cause for the dam failure. What’s more, these disasters are increasing in severity and frequency, according to an interdisciplinary analysis, as a result of technologies that allow companies to exploit lower-grade ore, generating higher quantities of waste in the process. Mine waste dams have become significantly larger and more susceptible to failure as a result. Large tailings dams built to contain mining waste, among the largest structures in the world, must stand in perpetuity. Yet there is no global entity responsible for oversight of tailings dam safety. Our demands to UNEP are simple:

• Issue new guidance on tailings dam management based on the recommendations made by the Mount Polley tailings dam review panel, including the shift to dry tailings storage;
• Advocate for the creation of regulations specific to tailings dams;
• Encourage the World Bank and other multilateral financial institutions to review the Mount Polley committee recommendations as they overhaul their lending safeguard policies.

Tailings dam failures are a global problem that will only get worse in the future. It’s time for UNEP to use their authority to call for higher standards and greater environmental protection.

(A bit of a shake but no problem.)

Quake strikes near US hydropower dam
By Reuters, September 1 2015, iol.co.za

WASHINGTON - A magnitude 4.2 earthquake struck near Grand Coulee Dam, the largest US hydropower facility, in northeastern Washington state on Tuesday, prompting an immediate inspection of the facility but leaving no visible damage, a spokeswoman said.
Operation of the Columbia River dam, which supplies electricity to 11 Western states, was not disrupted by the tremor, according to the spokeswoman, Lynne Brougher of the US Bureau of Reclamation, the agency that runs the dam. The US Geological Survey reported the quake was centered about 25 miles (40 km) north of the dam near the town of Nespelem in heart of the sprawling Coleville Indian Reservation, an area ravaged by a major wildfire in recent days. Weak to light shaking was felt over a wide region, but there were no immediate reports of damage or injuries. Earthquakes of that magnitude are not uncommon in seismically active Washington state, but Tuesday's 4.2 tremor was the first to strike this close to the dam "in quite a while," Brougher said.

"Oh, it got our attention. Everybody felt it," she said, adding that the trembling went on for roughly 30 seconds. She said it would take several hours for dam officials to complete their inspection of the mammoth facility. Grand Coulee stands 5-1/2 stories tall, is 500 feet (152 meters) thick at its base, and stretches nearly a mile (1.6 km) across the Columbia River to form Lake Roosevelt, which provides drinking water and irrigation supplies for communities and farms in the region. The dam includes three major hydroelectric power-generating plants and a pump-generating plant that average a combined 21 billion kilowatt hours of electrical output a year. It also controls stream flow for flood management, fish migration and recreation downstream. The original dam structure was completed in 1941, with additions made in the 1960s and '70s.

Lake Tschida Residents Ask Bureau of Reclamation to Keep Trailers

One of the risks of living near any body of water is that when it floods, property can be affected. That nightmare happened to the residents of Lake Tschida when the lake spilled over its banks in 2009. Things could, however, be getting a lot worse. "We have money invested. It's our way of life, it's our cottage, it's our place to get away," said Leo Vetter, Heart Butte Association president. But that way of life may be going away for the trailer owners around the lake. In 2009, 16 trailers flooded, which is what lead to the Bureau of Reclamation original ruling that all 114 trailers around the lake had to be carried away. The deadline was pushed back until 2021, but now residents, along with Sen. John Hoeven, R-N.D., have invited the Bureau of Reclamation Commissioner Estevan López to the lake, to try and reach a compromise which would allow the trailers to stay. "Our primary motivator is dam safety. Water quality is another issue for us. We have to make sure that we do our job well in that regard," López said. The residents suggested possibly requiring reinforcements to keep the trailers in place in case of a flood. "The solutions that we've put forward address dam safety and so that's where we're saying to the bureau; we get that you're concerned about that issue, dam safety, but we are fully addressing it, and we're open to any other ideas you have that enable these people to stay here," Hoeven said. López will now take the proposal under consideration. He says there's no timetable as of yet for making a decision.

Copy obtained from the National Performance of Dams Program: http://npdp.stanford.edu
the Bureau of Reclamation chooses to do nothing, trailer owners would have to remove their homes by 2021. They would keep their permits, however, and would be allowed to use another type of recreational vehicle, something many residents say they wouldn't be able to afford.

**Hydro:**
(Guess this sort of hydro because it uses water.)

**U.S. Navy Invests in Hawaiian Hydropower Tech**

A New Kind of Water Turbine
Written by Christian DeHaemer, August 28, 2015, energyandcapital.com

Most of the major U.S. renewable energy advances seem to come from California, the land of solar power and Tesla cars. However, it is Hawaii that has gone beyond the normal wind turbines and solar panels, though it has plenty of those as well, to create its own kind of hydropower called Ocean Thermal Energy Conversion (OTEC). OTEC is the larger version of evacuated solar collector tubes: water is enclosed in an energy-collection container, the heat from the sun naturally warms the water, and the machinery pumps the heated water down below the cooler water underneath. The heated water cools some, but rises back up because of its temperature, and cooler water is forced upward to begin the cycle again. Hawaii is the first state to have one of these fully closed-cycle systems. The company that built it, Makai Ocean Engineering, touts the reliability of such technology.

70% of the sun's rays fall on ocean water on Earth, and heat from sunlight is trapped in that water even at night. Makai claims it could be a constant source that is “capable of providing massive levels of energy.” The single 150-kilowatt plant has the capacity to power about 120 homes. And even better, that power is dispatchable, meaning it can be ramped up or slowed down for peak electricity hours, and can be used to provide power when wind and solar energies are scarce. The technology is still new, but has enough potential for the U.S. Navy to invest in it. This first plant cost about $5 million, so any outside funding will be a huge help. The Navy itself has plans to produce at least 50% of its onshore energy from renewable sources in the next five years, and for a water-based organization, this kind of high-capacity hydropower could cover a big part of that goal.

According to Makai, one commercial-sized OTEC plant could replace about 1.3 million barrels of oil and cut almost half a million tons from carbon emissions per year.

(Foot of hydro.)

**FFP New Hydro To Deliver 21 Hydroelectric Projects On Existing US Dams**
August 28th, 2015 by Joshua S Hill, cleantechnica.com

FFP New Hydro has acquired the finances to continue developing its advanced hydroelectric power projects on existing dams in the US. FFP New Hydro, majority owned by an affiliate of US Renewable Group, itself one of the largest investment firms focused exclusively on the renewable energy industry, announced Tuesday that it had closed a senior loan facility with Crestline Investors, and acquired and integrated Rye Development, FFP New Hydro’s manager, into the
company. These developments will allow FFP New Hydro to continue the development of its portfolio of 21 advanced stage hydropower projects that are being developed on existing US dams over five states — Pennsylvania, West Virginia, Indiana, Mississippi, and Ohio. The projects will cumulatively reach 200 MW of new generation capacity, and are expected to generate approximately 900 GWh of clean energy each year, which is the equivalent of generating electricity for more than 80,000 homes.

“Hydropower is valued by the investment community for its stable cash flows, long operating life, low technology risk, and highly predictable generation based upon decades of historical river flow data,” said Ramya Swaminathan, President and CEO of FFP New Hydro and Rye Development. “We are pleased to be managing this strong portfolio of hydropower projects, all of which are now eligible for the Federal Investment Tax Credit (ITC).” The projects are not inherently revolutionary, but in a day and age where cost-effective and efficient clean energy development is king, making use of existing dams to develop hydropower energy generators is sure to be well received by most, if not all. Which is why FFP New Hydro also controls a pipeline of 23 projects which are each in the early stages of development and FERC licensing, and — if completed — will see an additional 280 MW of new generation capacity installed across existing dams in eight states, including Kentucky, Pennsylvania, Oklahoma, Louisiana, Alabama, Ohio, Mississippi, and Arkansas.

(Everybody is thirsty, including hydro projects.)

**Hydro power loss another drought casualty**

Study suggests that the decline of the cheap, clean electricity source is driving up costs, pollution levels

Seth Nidever Staff Reporter, 8/29/15, hanfordsentinel.com

Remember hydroelectricity, that cheap power source derived from pent-up water behind dams? Reservoirs are a fraction of capacity in the fourth year of California’s worst drought in recorded history. That means a drop in the amount of power coming from hydroelectric facilities. Normally, snowmelt runoff from the Sierra would be spinning the turbines in these facilities like crazy – and generating electricity in the process. Except there has been almost no runoff this year. The lowest snowpack ever recorded had mostly melted off before summer – and peak electricity use – even started.

A recent study by Oakland-based water think tank The Pacific Institute estimated that, from October 2011 to September 2014, hydroelectricity was 12 percent of the state’s total electricity generation — down from an average of 18 percent. The estimate cost of that loss in hydro power? $1.4 billion. Not counting the lone wet year of 2010-2011, six years of drought going back to 2007 have cost the state an extra $2.4 billion, according to the study. The study came up with that figure by estimating the cost of the extra natural gas burned to make up the difference, power purchased from other states and expanded wind/solar power generation. That could mean higher bills in the future for ratepayers – residential, business and agricultural. Hydro power is the cheapest electricity available. Southern California Edison Spokesman Paul Griffo declined to
address the questions of whether it's costing the utility more to meet the power needs of its customers amid drought or whether customers are going to be paying more. According to the California Energy Commission, renewable energy sources --- solar and wind, mostly -- and natural gas are creating plenty of extra generating capacity to compensate for hydroelectricity's decline. The system has 38 percent more capacity than needed this summer, according to a U.S. Energy Information Administration study released last month. For Kings County agriculture, the issue hits home in the form of a growing number of electrical pumps work harder and harder to draw water up from sinking aquifers. According to Kings County Farm Bureau Executive Director Dustin Ference, some growers are running computer software that automatically turns pumps off during peak use periods when rates are higher. Compared to receiving water from the Kings River in an average precipitation year, local farmers in the Kings River irrigation system are spending three to four times more to pump water out of the ground in the drought, according to Kings County Supervisor Craig Pedersen, himself a farmer.

All that cost pressure is causing a growing local interest in solar power. Aside from the utility-scale solar panel installations cropping up around Kings County that supply electricity straight to SCE and other utilities, local farming and dairy operations are installing their own on-site solar systems to meet their own power needs. Dino Giacomazzi is considering installing solar power panels at his dairy east of Hanford as a way of “capping costs.” By that he means installing solar as a way of insulating himself against projected cost increases in electricity provided by the grid. Aside from cost issues, the report suggests environmental impacts from the loss of hydro. The Pacific Institute report said that increased natural gas burning to generate electricity is elevating air pollution levels. The reports' author, Peter Gleick, also noted that the trend in hydroelectricity production has been on a downward slope since 2001. “This raises the question of the role of climate change in affecting long-term hydrologic conditions in the state – a question beyond the scope of this analysis, but one that researchers are actively pursuing,” Gleick stated. (Beautiful dam. What's in a name?)

Tribes get ready to celebrate their takeover of Kerr Dam
By Vince Devlin, missoulian.com, 8/29/15

PABLO – The Indian tribes that once opposed the construction of Kerr Dam will celebrate their acquisition of it over Labor Day weekend. The Confederated Salish and Kootenai Tribes will become the first Indian tribes in the nation to own a major hydroelectric facility on Saturday, Sept. 5. They’ll commemorate the historic moment the same day, from 10 a.m. to 2 p.m., at the Joe McDonald Health and Fitness Center on the campus of Salish Kootenai College in Pablo. Norman Bay, the chairman of the Federal Energy Regulatory Commission, will attend. The tribal community and general public are welcome at the event, which will include a luncheon featuring salmon and buffalo, a tribute to workers who lost their lives during the dam’s construction, a video highlighting people who have worked — some of them for decades — toward this day, and commemorative T-shirts and posters. CSKT Chairman Vernon Finley called it “a milestone for our community.” “The construction of the Kerr Project in the 1930s marked a time of significant cultural and economic changes for our tribes,” Finley said. “Today as we look to the future, we anticipate that
the project, which once exemplified destruction to our way of life, may now help restore and revitalize our tribes.”

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No tribal government existed when construction of the dam began in 1930, just seven months after the 1929 stock market crash. As the Great Depression worsened, construction was halted from 1931 to 1936. The dam, built on an important Native American religious and cultural site and opposed by many tribal members, was completed in 1938. Several tribal members were among 14 workers killed during the dam’s construction, many in a landslide. CSKT long ago traded the potential of higher rental fees for the land the dam sits on – which now approaches $20 million annually – for the opportunity to one day buy the dam outright. CSKT has held a joint license for the dam from the Federal Energy Regulatory Commission since Sept. 5, 1985, first with the Montana Power Co., then PPL Montana and – through Saturday – NorthWestern Energy. Under the license’s terms, the tribes have had the exclusive right to purchase the dam on the 30th anniversary of the issuance of that license. The license is good for another 20 years. Energy Keepers, a tribally owned corporation, has overseen the acquisition of Kerr Dam and, on Sept. 5, will assume responsibility for running it and selling the electricity it produces on the open market. The tribes intend to rename the dam, which was named for the then-president of Montana Power. A new name has not yet been announced by the CSKT Tribal Council.

Hydroelectric Power From City Water Supply
August 31st, 2015 by Stephen Hanley, planetsave.com

LucidEnergy, a Portland, Oregon-based startup that launched in 2007, has devised a system to get hydroelectric power from city water supply pipes. A pilot project in Riverside, California is in operation and now a full scale project is beginning with the city of Portland, Oregon. Gregg Semler, president and CEO of LucidEnergy, said his team originally was looking for ways to capture energy from streams. But they soon realized it is difficult to predict the flow of a stream and generating hydropower could be environmentally degrading. Water pipes don’t present any concerns about the environment and they have a fairly consistent flow of energy. “What’s really interesting about Lucid is this is a new source of energy that’s never really been tapped into before,” Semler said. “You take the best of hydropower and put it in the pipe.”

Even in drought conditions, such as California is experiencing now, delivery of drinking water in city water systems remains relatively constant. “We are less vulnerable to variations in the ability to generate this type of hydropower than we are with projects with large dams that need to be full,” says Laura Wisland, senior energy analyst for the Union of Concerned Scientists. “I live in California, and we’re having a drought, and our ability to develop hydropower is much more limited than it has been in the past. I don’t think you’d see the same level of variability with this type of hydro power, there’s a more constant supply of power.”

LucidEnergy tested out the project in Riverside with funding from the Department of Energy. Semler said he targeted Riverside because he knew the city was “really progressive in terms of energy efficiency. We went to them, and they liked the idea. It was a relationship right off the bat,” he said. In Riverside, the electricity generated from the pipes is used to power street lights.

The Portland project is much larger and is expected to produce 1,100 megawatt-hours of electricity a year. That’s enough for about 150 homes.

The system is installed in 50 feet of Portland water pipes, in sections where the water flows downward due to gravity. There are four sections of pipe, and each has a generator on top and a
42-inch turbine that spins as the water flows inside. According to the company, up to four units of the so-called LucidPipe can be installed “in a standard 40-foot” section of water pipe, and one mile of 42-inch diameter pipeline has the potential to produce more than 3 megawatts of electricity.

In Portland, the turbines were installed by replacing a section of existing pipe with Lucid’s pipe, and bolting that new pipe to the existing water system in a process “sort of like Legos,” Semler said. But he also said there is a market for the technology in cities that are building new water networks where new sections of pipe could incorporate Lucid technology, according to Think Progress.

Many cities around the world are dealing with aging infrastructure and facing questions about how to replace it, said Amy Nagy, business development coordinator at the Portland Development Commission, which worked with Lucid to get the project off the ground in Portland. As cities go through and make improvements to their infrastructure, she said, they should be looking into whether they could get a dual purpose out of it. “Water pipes deliver clean water, and LucidPipe adds an additional benefit of clean energy production, and producing revenue that the city can go back and reinvest,” she said. Semler is already looking at expanding the system to other cities.

Johannesburg, South Africa announced earlier this year that it would be employing the technology in its water system. And Semler said he’s gotten interest from cities in China, Brazil, Canada, and Mexico. A city interested in LucidPipe must first agree to adopt the system, and then go about securing private capital. Portland’s project cost about $1.7 million, which was paid for by private investors. It’s expected to produce $2 million worth of energy over 20 years. The revenue generated from the energy goes partly to Portland, partly to Lucid, and partly to the third-party investor. Those private investor own the project in Portland, Semler said, so the system works similarly to solar panel leasing. “The challenge in getting cities to agree to the project,” Semler says. “A lot of cities don’t have the capital to put in pipelines. Mostly what cities do is try to keep infrastructure viable. We see LucidPipe as a tool that water agencies can use to bring private capital into building out new water infrastructure projects, or to reduce operating costs,” he said.

“There’s been a lot of investment over the last 10 years in solar, wind, and biogas — we see same thing happening with our product.” “Hydropower is an extremely important part of our existing electricity portfolio and will continue to be so,” Wisland said. “Most people think the era of large dam building in the U.S. is over — we really do need to be turning our efforts over to ways to improving efficiency and finding more creative, non-traditional ways to generate hydropower electricity. As we think about reducing emissions in electricity sector, we can’t take hydro off the table.”
Turns out, it is easy being green.
Nine years ago, Washington’s utilities warned that renewable energy thresholds mandated by Initiative 937 would increase power costs, and those increases would be passed along to consumers in higher rates. Voters passed the initiative anyway by a narrow 52 percent majority. The alarms have fallen silent, at least as far as the private utilities are concerned.
I-937 set three thresholds. Alternative energy – wind, solar, biomass and upgrades of hydroelectric plants – had to constitute 3 percent of total utility resources by 2012, 9 percent by 2016, and 15 percent by 2020.
According to a new report from the Utilities and Transportation Commission, Washington’s three major investor-owned utilities met the first of three thresholds with incremental power cost increases of less than .5 percent. Spokane-based Avista reduced its costs by 1 percent. But a friendly Legislature lowered the bar by reclassifying as renewable the 50 megawatts generated at its Kettle Falls facility, which relies mainly on wood waste – biomass – for fuel. That change alone assured Avista will comply with I-937 all the way through 2020, with a little extra to spare. Upgrades of its hydroelectric dams that began before 2006 and continue have also helped. Megawatts gained by changing out turbines, for example, are cheaper than other sources of energy. Puget Sound Energy has complied in part by doing the same to its dams. Pacific Power was the beneficiary of another legislative change that allowed it to count renewable resources outside the region, such as windmills in Wyoming.

But I-937 has turned out less well for Washington member-owned utilities like Inland Power & Light Co. Many buy all or almost all their electricity from the Bonneville Power Administration, which sells electricity generated by federal dams in the region, and the Columbia Generating Station at Hanford. Although the agencies that own the federal dams on the Columbia and Snake rivers are modernizing at Grand Coulee and elsewhere, I-937 does not allow electric cooperatives like Inland or public utility districts to count those upgrades against its alternative energy requirements. Instead, they must buy renewable energy credits that represent the green attributes of new or improved generating stations somewhere else. Those credits are more expensive than power from BPA. Bringing Inland into compliance with I-937 will add 2 percent to power costs next year, and 4 percent in 2020. Another provision of I-937 has the perverse effect of discouraging small utility investment in conservation, which is often the most cost-effective way of meeting electricity demand. But green energy has brought plenty of green into Washington; about $8 billion in new investment, and substantial increases in property tax revenues for counties lucky enough to be windy. It’s been easier than expected, but Washington utilities have always been innovative. However, the initiative may not be spreading benefits equally among all state residents. That’s an issue the next Legislature should examine and, if necessary, correct.

(They didn’t mention the FERC annual charges for the use of the dam.)

Two hydro turbines take shape in county
N.J.-based developer of projects at Townshend, Ball Mountain dams says both may be online by fall
By Mike Faher/The Commons, commonsnews.org, 9/3/15

TOWNSHEND, NY—Two long-delayed Windham County hydroelectric stations are well underway and may begin producing power by fall, the developer said Wednesday. New Jersey-based Eagle Creek Renewable Energy LLC is building hydro projects at U.S. Army Corps of Engineers dams in Townshend and Jamaica. While the West River turbines are relatively small – they will produce 3.1 megawatts combined – they have required years of development and permitting work. “It feels very good,” said Bud Cherry, Eagle Creek’s chief executive officer. “It was a long journey. There were a number of challenges that came up along the way.” Corps of Engineers officials say they are working well with Eagle Creek and said the dam sites remain open to the public for visitation and recreation in spite of the construction activity. “We have to make sure [the work] is done...
consistently and with good quality, and thus far we’ve been pleased with the quality of the work,” said Frank Fedele, an engineer who is operations division chief for the Corps’ New England District. Eagle Creek is pursuing the projects at Townshend and Ball Mountain dams under the corporate name Blue Heron Hydro LLC. The company acquired the projects in summer 2012.

Before that acquisition, the hydro projects already had received 50-year licenses from the Federal Energy Regulatory Commission. There also have been long-term power-purchase agreements in place via Vermont’s Sustainably Priced Energy Enterprise Development (SPEED) program. But it had been difficult for Blue Heron to get the projects moving. The state in 2009 had set a three-year commissioning deadline, then granted an extension to the end of 2013.

In April 2013, the Vermont Public Service Board granted a second extension through Oct. 31, 2014, at Blue Heron’s request. Last summer, a third extension set a new deadline of Dec. 31, 2015. In the final stages of development, company administrators said they were waiting for Army Corps permits, citing a backlog at the agency. Those permits eventually were granted, and work began a few months ago. “We’re in construction. Things are moving along expeditiously at both sites, and we expect to be in service in the fall, well ahead of the end of the permit deadline,” Cherry said.

Fedele said hydro contractors have been “a constant presence” at the dam sites. “They’re typically working six days a week, 10 hours a day,” Fedele said. “Right now, they’re in the process of constructing two control buildings – one at each site.” Fedele said local Army Corps staff have been working closely with Blue Heron and its contractors, and that includes drawing down water levels to allow for the work to proceed. For example, Fedele said Ball Mountain’s summer “pool” depth typically is about 65 feet, but it’s been maintained this summer at 35 feet – usually the maximum pool depth in the winter. “We’ve had a relatively dry summer, which has worked out well,” Fedele said.

Eagle Creek is not paying the Army Corps any money, and there is no lease agreement, Fedele said. Rather, in addition to the permits the Corps has issued, the agency developed a construction memorandum of understanding with the developer, and there eventually will be an agreement governing operations and maintenance. Thus the Army Corps is not making any money from the hydro projects, Fedele sees the new turbines as compatible with the agency’s work.

“We have a pool there that we keep for flood-risk management and recreation, and they’re using that pool for another mission,” Fedele said, adding that the hydroelectric stations are “consistent with our mission and goals.” Cherry said the turbines also fit into Eagle Creek’s portfolio. The company owns and operates 43 hydroelectric facilities in seven states, and Eagle Creek last week announced the acquisition of the 1.5 megawatt Newfound Hydro site in Bristol, N.H.

The turbines at Townshend and Ball Mountain will be Eagle Creek’s first two facilities in Vermont. “There are a lot of existing dams … that are suitable for adding generation, and this is a purposefully small step into that space for us to see how the total permitting system worked for us,” Cherry said. “We’re going to be continuing to look for similar opportunities and potentially larger facilities. We’ve grown substantially over our four years of life, and we’re very pleased with being able to maintain that growth.”

Increased power density from compact hydroelectric generators 04 September 2015
By Mark Venables, plantengineer.org.u, 9/4/15

Copy obtained from the National Performance of Dams Program: http://npdp.stanford.edu
WEG has launched two new series of efficient, high quality and compact hydroelectric generators - GH11 and SH11 - with up to 70 per cent more power density than previous models. As a result, engineers can benefit from a low weight and space-saving solution for easier installation. The new generators are also available with shorter lead times thus helping hydroelectric power stations to reduce downtimes and increase productivity. With rated capacity from 500 to 18,000kVA, the GH11 and SH11 8-pole to 36-pole hydroelectric generators are available with frame sizes from IEC 630 to IEC 1800 and output voltages from 400 V to 13.8kV at 50 or 60Hz. The hydroelectric generators provide excellent reliable performance. The GH11 series is designed for standard applications with relatively small and simple turbines, while the robust SH11 series is designed to meet more demanding specifications for turbines and complex hydroelectric power stations. The SH11 generators have a modified mechanical and electrical design that allows them to be operated with higher inertial forces and relatively large axial and radial loads despite their compact construction. They can also withstand adverse conditions such as high continuous speeds or load shedding. WEG’s generators are easy to install and commission in existing plants because the design is based on a standard technology platform. WEG has standardised the production of the new generators and key components are provided in the preliminary design stage. As a result, the manufacturing process is therefore similar to series production and end users can benefit from shorter delivery times. The generators are highly versatile and can be easily adapted to individual application specifications. Both the GH11 and SH11 can be installed either horizontally or vertically and are available in versions for brushless excitation (with or without an auxiliary exciter) or static excitation with brushes.

Water:

(Interesting history! The pumps at Parker Dam were built in my hometown of Jeannette, PA.)
California Retrospective
How a 1930s water war between California and Arizona delayed Parker Dam
By SCOTT HARRISON, latimes.com, 8/30/15

"Water war" has for decades been a term used to describe the political battles over water in the West. But back in the 1930s, a fight between California and Arizona over water actually veered from cold war to hot war — almost. In 1934, the Metropolitan Water District began construction on Parker Dam, which was opposed by Arizona. The resulting Lake Havasu would feed the new Colorado Aqueduct. Before, in 1922, six of seven states signed the Colorado River Compact. Upset with its allotment, Arizona refused to sign. So when Parker Dam construction began, Arizona sought to block the project. In March 1934, Arizona Gov.
Benjamin Moeur called up the Arizona National Guard. Six soldiers arrived in Parker, Ariz., to observe the construction.

National media, including the Los Angeles Times, ridiculed the deployment. When an Associated Press photo appeared in the March 10, 1934, edition of The Times, the accompanying caption reported: "Arizona Troops Leave For (Water) Front. "Without any flare of trumpets or a band playing martial airs, this squad of Arizona National Guardsmen left Phoenix and arrived at Parker yesterday preparatory to patrolling the dam site to prevent 'encroachment' on Arizona's rights by the Metropolitan Water District. Maj. Pomeroy, commanding the detail, is shown on the extreme right."

For the next several months, the troops patrolled the Arizona side of the dam site. In November, the construction of a trestle bridge from the California side prompted action. On Nov. 10, Moeur declared martial law. He dispatched more than 100 National Guard troops to block construction on Arizona's shore.

U.S. Secretary of the Interior Harold L. Ickes intervened and halted construction. The troops were recalled. Interested in the stories shaping California? Sign up for the free Essential California newsletter >>

The resulting legal action led to an April 29, 1935, Supreme Court decision. The April 30, 1935, Los Angeles Times reported: "Without a dissenting voice, the United States Supreme Court yesterday forced an indefinite suspension of work on Parker Dam by upholding Arizona's right to object and interfere with construction.... "Arizona officials, a dispatch from Phoenix said, hailed the decision as a victory in their battle over the Colorado River, which has been waged for twelve years." Gov. Moeur, who last November ordered out the Militia to stop construction, was quoted as saying he was pleased; and he and other State authorities indicated they now intend to let other sides in the controversy make the first move. "By its far-reaching decision, the Supreme Court virtually justified Gov. Moeur's action in ordering out the troops." The decision, written by Justice (Pierce) Butler, assert the dam project never has been authorized by law." Political compromises were made. Congress passed legislation allowing construction to proceed. Parker Dam was finished in 1938.

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