7/4/2014

Some Dam – Hydro News™

And Other Stuff

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Quote of Note: *"The government is like a baby's alimentary canal: a happy appetite at one end and no responsibility at the other." - Ronald Reagan*

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"Good wine is a necessity of life." - -Thomas Jefferson
Ron's wine pick of the week: **2012 Nobilo Pinot Noir "Icon"**
"No nation was ever drunk when wine was cheap." - - Thomas Jefferson

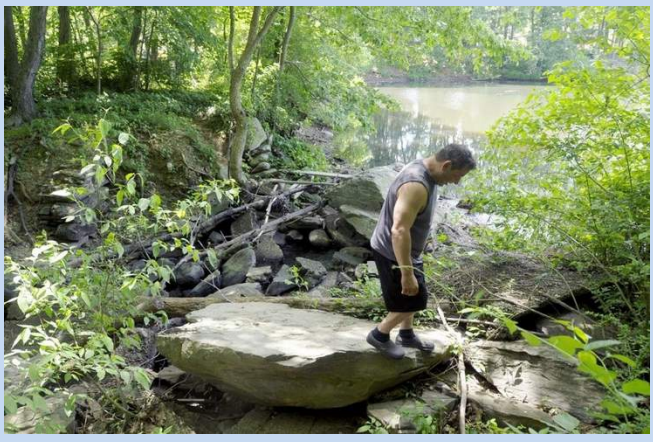
Dams:

(I'm looking for it. Where's the dam? Cost estimates are all over the place!)

Patch Pond dam: Repair or remove?

By Nick Kotsopoulos Telegram & Gazette Staff, telegram.com, June 19, 2014

Worcester, MA — To repair or remove? That is a question city public works officials are contemplating these days in regards to the future of Patch Pond dam. The dam, one of 30 the city is responsible for, does not meet current state standards for dam safety, according to Paul J. Moosey, commissioner of public works and parks. As a result, he said, the dam is categorized as a "high hazard structure" due to the potential for loss of life and/or property damage downstream should a



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failure occur. There already is a partial breach at the east embankment of the dam and portions of its primary spillway have collapsed.

"It is perhaps the single worst dam we have and is the only one close to failure," Mr. Moosey said. "It has to be repaired, replaced or removed. There is no goal to take the dam out: It's just one of the options under consideration. "We are a long way from giving the (city) administration and City Council a recommendation," he added. "We probably won't be doing that until early fall." The city has received a grant from the state to conduct a feasibility study on the future of the dam. CDM Smith, a Cambridge-based consulting firm, has been hired by the city to help do the feasibility study. The dam is at the south end of Patch Pond, a man-made body of water north of June Street, with June Street Terrace to the west and Glendale Street to the east. It was built on the Tatnuck Brook in the late 1700s for sawmill and gristmill operations, and was later used in conjunction with the operation of an icehouse there. The dam is 12 feet high, 210 feet long, 16 to 25 feet wide and stores about 19.5 million gallons of water, according to CDM Smith. The city took possession of the dam in 1961. CDM Smith said some of the reasons to think about removing the dam include that it will improve habitat, fish migration, water quality and public safety. Removal of the dam would make the pond a free-flowing stream, which would increase dissolved oxygen levels in the water, eliminate warm water and the build-up of nutrients that lead to plant and algae growth, according to the consultant. It pointed out that there would be a "long-term ecological gain" by restoring the stagnant impoundment of water to a naturally flowing water system. Also, the wetlands that would replace the pond would be able to moderate the flow of water through there and absorb floodwaters, improve flood control and potential for storm damage, the consultant said.

But the option of removing the dam is receiving strong push-back from neighborhood residents. "It's a thing of beauty. It's really a beautiful area and a natural-looking thing," Jim Bombard of 387 June St. said in talking about Patch Pond. Gregory Shevchuk, who lives on June Street Terrace, said Patch Pond is a water asset that residents want to see maintained. He said many of the homes around the pond were built there because of that body of water. He said the property values those homes would plummet if the pond "is turned back into a swamp." "It's a gem of a pond. It's a beautiful area," Mr. Shevchuk to the City Council Public Works Committee Wednesday night. "If that dam is removed, that pond would be turned back into a swamp and not a nice little river. "It's a shame to even consider getting rid of this dam and the pond. It's a tragedy," he added. "I can't see any environmental benefits to it. I'm not for getting rid of this dam. I'm for repairing it and restoring this gem for the city." John Reed, a founder of the Coes Pond Association and member of the Tatnuck Brook Watershed Association, said he believes there is great value to the dam in terms of Worcester heritage — past, present and future. Ann McPartland, also a resident of June Street Terrace, said her "heart would be broken" if the dam were removed, adding that there would be "nothing to hold me there anymore."

To remove the dam could cost the city as much as $8 million, according to public works officials. Because elevated arsenic levels have been found in Patch Pond, if the dam were to be removed, the sediment in the pond would need to be removed or at least stabilized so it is not discharged downstream. According to the consultant, the cost of removing the dam and all the pond sediment could be $7.2 to $8 million. In comparison, if the dam were to be taken down and only a limited sediment amount of removal, the cost would drop to $2.7 to $3.2 million.

Meanwhile, preliminary estimates for repairing the dam and bringing it up to state standards have been pegged at $2.8 to $3.8 million. But with an anticipated 20-year life cycle for a dam, the additional costs to upgrade and maintain the dam over that period would bring the overall cost of the dam repair to $4 to $5.1 million. Councilor-at-Large Kathleen M. Toomey, chairman of the council's Public Works Committee, promised that additional public hearings will be held before any decisions are made about the dam "The primary importance is safety," she said. "We may find it is less costly to repair the dam, and it may have the least amount of impact. I think it's great that the community is coming together on this issue, and I think we will be able a find a solution that will do us well."

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(Might?)

Sen. Ron Wyden's bill that might fund fixes at Scoggins Dam passes committee

A bill introduced by Sen. Ron Wyden, D-Ore., might help fund seismic fixes at Scoggins Dam, in Washington County. (Michal Thompson/The Argus)

By Simina Mistreanu | oregonian.com, June 18, 2014

A bill that would remove the spending ceiling on dam safety improvements and could help finance costly fixes at Scoggins Dam, near Gaston, has passed the U.S. Senate Committee on Energy and Natural Resources. Oregon Sens. Ron Wyden and Jeff Merkley introduced the bill earlier this year to amend the Reclamation Safety of Dams Act of 1978 and remove spending caps for construction work on 476 dams and dikes managed by the U.S. Bureau of Reclamation across the western United States.

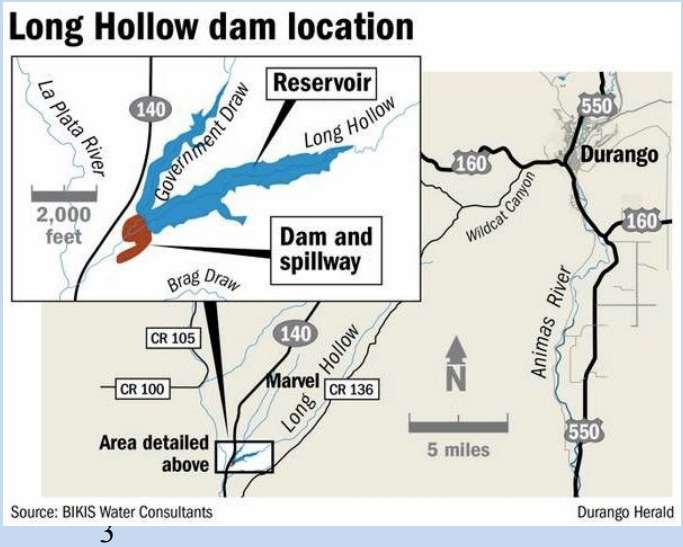
Among those in need of renovation is Scoggins Dam, in Washington County. Officials fear a 9.0-magnitude earthquake would sweep the dam and flood or otherwise affect more than 4,000 people. A seismic fix would cost about $340 million.

The bureau has $400 million before it reaches a $1.4 billion spending cap for dam safety projects in its entire district, which spans across 17 states, spokesman Peter Soeth said in January. The committee, which met Wednesday, June 18, also passed an amendment to the bill to authorize $1.1 billion for safety construction projects to the dams and dikes managed by the bureau. Of those, 77 percent are classified as "high" or "significant hazard," meaning failure of the structures could result in damages or even casualties in the surrounding communities. A vote in the full Senate hasn't been scheduled yet. Scoggins Dam sits along the Cascadia Subduction Zone, an earthquake-vulnerable fault off the Oregon and Washington coasts. The 151-foot high dam forms Henry Hagg Lake. The dam is owned by the bureau and operated by Tualatin Valley Irrigation District, which uses it for storage, along with the Lake Oswego Corporation, the cities of Hillsboro, Beaverton and Forest Grove and Clean Water Services.

(Who said they aren't building new dams?)

Long Hollow Dam construction complete

From *The Durango Herald* (Dale Rodebaugh): coyotegulch.wordpress.com, 6/21/14



A ceremonial load of dirt was dumped Thursday to mark the end of construction of the Long Hollow Dam. The brief topping-out observation was attended by members of the Ute Mountain Ute Tribe, which helped fund construction, and Brice Lee from La Plata Water Conservancy District, which sponsored the project. The reservoir behind the dam will store 5,300 acre-feet of water from Long

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Hollow Creek and Government Draw to support area irrigators and help Colorado meet its obligation to share La Plata River water with New Mexico…

The dam is 151 feet high with a span of 800 feet. A central clay core is supported upstream and downstream by tons of sand, rocks and dirt. Aaron Chubbuck, Weeminuche project manager, said the dump trucks used during construction covered the equivalent of 10 trips around the world at the equator (about 250,000 miles). Finishing touches remain. Sensors will be placed on the face of the dam to record possible movement or leakage, and electrical and hydraulic lines will be installed to operate the intake gate and valves on the downstream side. The “borrow areas” from where construction materials were taken will have to be revegetated.

(Good luck with the silt!)

Key part of San Clemente dam removal under way

Heavy equipment being hauled to project site through July 11

By Jim Johnson, montereyherald.com, 06/22/2014

Carmel, CA >> Heavy construction equipment being hauled by CHP-escorted big rigs up Carmel Valley Road starting last week signals the start of a key phase of the San Clemente Dam removal project. Bulldozers, excavators and off-road dump trucks are being delivered to the project site for use in excavating a new channel for the Carmel River around the aged dam, an innovative process that will allow the deconstruction of the 106-foot structure while preventing millions of cubic feet of sediment built up behind it to flow down the river. The new river route will connect to the adjacent San Clemente Creek and run for a half-mile stretch along the adjacent waterway. California American Water spokeswoman Catherine Stedman said the ability to re-route the river and leave the sediment in place is what makes the project "so special from an engineering point of view."

Stedman said the process allows the work to move forward where other similar projects struggled with the challenges of releasing large amounts of sediment down a river. Work crews have been de-watering the reservoir behind the dam and building the diversion pipeline to allow the river to be re-directed around the project site. This week, the plan is to begin making the cut to allow the river to be re-routed. Work will start on the actual removal of the dam later this year, but final dam removal will occur next year. The heavy equipment hauling began on Monday last week and will continue through July 11, according to Stedman. Travelers along Carmel Valley Road are being warned to expect 15-minute traffic delays between Carmel Valley Village and the project entrance two miles east of the village between 9 a.m. and 3 p.m. as a result. The heavy equipment will remain on site until the end of the construction season in October, Stedman said. The $83 million dam removal project is the largest of its kind in California history and represents a unique collaboration between a private entity, Cal Am, and public agencies, including NOAA Fisheries and the state Coastal Conservancy, which shared the cost of the removal. Cal Am customers will pay about $49 million of the project cost, while the public agencies and private non-profit organizations such as the Nature Conservancy will cover the remaining cost.

Built in 1921, the dam was ruled seismically unsafe in the 1990s, and has been out of use for years. The removal project has been hailed for its goal of improving the river's natural habitat for endangered steelhead and other protected species, and is strongly supported by the Carmel River Watershed Conservancy and the Carmel River Steelhead Association.

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(Better safe than sorry!)

More studying dam safety, says Corps

portervillerecorder.com, June 23, 2014, THE RECORDER

The U.S. Army Corps of Engineers continues to study the safety of Success Dam and a report is expected next month that could allow the filling of the lake above Porterville if Mother Nature cooperates. Success Dam came under a microscope more than six years ago when a study began about increasing the storage capacity of the lake. Those initial studies led to concerns over the safety of the dam, first in the event of an earthquake and second, seepage under the earthen dam.

After six years, however, and restricting how much the lake could hold, the Corps announced the safety of the dam was not a great as first thought and announced the dam could once again hold as much water as it was designed — 82,000 acre feet.

That announcement came this spring, even though with the lack of snowpack this year the lake would never come close to holding that much water. Now, Glen Reed with the Army Corps of Engineers said more studying is being done. "The initial results of our risk assessment have been positive and show less risk than we once thought, but it's important to remember this does not mean the dam is safe," said Reed in an email. He noted Success Dam is over 52 years old and must be continually evaluated to make sure it poses the least safety risk to the public. He also noted that larger, more frequent storms and new data that didn't exist back when the dam was built have "made us acutely aware of the threats that today's aging infrastructure faces." Fifth District Supervisor Mike Ennis is hopeful that not only will the Corps allow the dam to hold water up to capacity, but that someday in the near future enlargement of the reservoir will still occur. "I'm pleased to get the restrictions off," said Ennis who has been closely monitoring the status of the dam. "It would be nice to know if we do get a wet year we could hold 110,000 acre feet of water," he added. Ennis said that extra 28,000 acre feet of storage would greatly benefit Porterville and the surrounding agriculture area. "That's a lot of water," he said of the 28,000 acre feet. "It will help everybody." He is anxiously awaiting the Corps report in July. He is hoping the Corps will be specific as to what it will take to enlarge the reservoir.

(Needed repairs get a boost!)

Locks and dams have new way to pay for much-needed repairs

Jun 24, 2014, Written by Becca Habegger, Multimedia Journalist - kwwl.com

Lock and Dam 11 in Dubuque

Dubuque (KWWL) - A federal law President Obama signed just this month is providing a new way to pay for improvements to the lock and dam system. It allows for the US Army Corps of Engineers, for the first time ever, to seek money from the private sector. This is important, as aging infrastructure along America's rivers could have big impacts on people's daily commutes and prices they pay at the gas pump and grocery store. Every year, billions of dollars in commodities

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get shipped down the nation's rivers. If one of the locks and dams that help regulate the river breaks, river traffic could halt and shipping could be delayed, with negative impact trickling down to the average American. The locks and dams along the Mississippi River were installed with a life expectancy of 50 years-- and that was more than 70 years ago, for most of them. Experts say river infrastructure is in sore need of updating, and up until now, money for repairs had been nowhere in sight. The US Army Corps of Engineers (USACE) operates and maintains the locks and dams, but plenty of private companies use them, from farmers shipping their grain to barge companies transporting goods.
Dan Arnold is construction manager at Newt Marine, a company that depends on this river and its functioning locks and dams for business.

"The locks and dams and the infrastructure of the river has been needing serious repairs for a long time, and it's been very difficult to get federal government funding to make some of these repairs," Arnold said. "That infrastructure is very important to our country as far as how much material moves up and down this river." He said he hopes the aging infrastructure will finally see some improvements with the Water Resources Reform and Development Act of 2014, which includes the new provision allowing private companies to help pay for upgrades. "Honestly, I would think the big barge industry would be the one that would be most impacted here....like Marquette Transportation...that are billion dollar industries, and they have the deep pockets to help make something like this happen," he said, adding, "companies that size have a lot of expertise in what is really necessary here and what will have the most impact and bang-for-the-buck spent on river transportation." Arnold says Newt Marine sees the new law "as a very positive step forward." The law impacts more than just people involved in the river shipping industry.
If a lock and dam failed, goods shipped by barge would have to be shipped another way. The Iowa Department of Transportation says the average 15-barge tow on the river carries the equivalent cargo of 200 train cars or 870 large semi-trucks. In other words, roads and rails would be more crowded if the river's shipping industry collapsed due to a broken lock and dam.
USACE Rock Island District spokesperson Ron Fournier said repairs to the district's 20 locks and dams would cost nearly $1 billion. Without private sector dollars, he said, those repairs might not happen any time soon. Since President Obama signed the new law just this month, Fournier said, the USACE is still in the very early stages of exploring what this public-private partnership may look like for the locks and dams.

(We should hope so!)

Cracked Columbia River dam to be fixed this year

June 25, 2014. mynorthwest.com

Yakima, Wash. (AP) -- The cracked Wanapum Dam should be repaired and its reservoir on the Columbia River near Vantage refilled by the end of the year. Grant County Public Utility District says it has started drilling holes that will be used to anchor the dam in bedrock. A 65-foot-long crack was discovered in the dam in February, and the utility determined more concrete and steel should have been used in the spillway when the dam was built in the 1960s. The Yakima Herald-Republic reports (http://bit.ly/1iFdEF3) the final repair plan is awaiting approval from the Federal Energy Regulatory Commission but drilling anchor holes in advance will save time.

(Beats me, if there's a dam there, remove it!)

Barstow's dam in Taunton set for removal in 2015

By Charles Winokoor, Taunton Gazette Staff Reporter, Jun. 26, 2014, tauntongazette.com

Taunton, NJ — Taunton is one of nine municipalities that will receive a portion of $4.5 million in grant money from the U.S. Department of the Interior to remove aging and potentially hazardous dams in the commonwealth.

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Another $240,000 for other projects has been allocated by the DOI for the state's Department of Fish and Game's Division of Marine Fisheries.
The $4.5 million will be administered by the DFG's Division of Ecological Restoration.
Taunton's portion will pay to remove East Taunton's antiquated Barstow's Pond Dam, which the state describes as "the first dam from the ocean on the Cotley River," the latter of which is a tributary of the Taunton River. Doing so will open up "eight miles of habitat for river herring, American eel, sea lamprey and other native species," according to the state's Executive Office of Energy and Environmental Affairs. Barstow's Pond Dam won't be dismantled until the summer of 2015, said Beth Lambert, manager of the state's Aquatic Habitat Restoration Program.
Lambert said there will be a period of negotiation between the state's Executive Office of Energy and Environmental Affairs and the federal funding agency to determine exactly how much will be allocated for the Taunton dam-removal project. She noted the state originally sought $5 million for the entire DFG project. Lambert said the permitting process has been completed, save for one last permit required from the U.S. Army Corps of Engineers. She also noted that Barstow's Pond Dam and its adjacent property is owned by Taunton Development Corporation, the non-profit that for years has marketed and developed both Myles Standish Industrial Park and Liberty & Union Industrial Park.

Barstow's Pond Dam is located off of Middleboro Avenue close to the intersection of Hart Street and Williams Street Extension. The Cotley River, which flows under a 1950s-era bridge overpass on Middleboro Avenue, is at least a few feet deep before it passes through and spills down an old wooden sluice. By the time it reaches the other side of the avenue, it is barely a few inches deep and resembles a brook. Michele Restino, Taunton's conservation officer, said she's pleased to hear that the state will remove the dam. Restino said her office previously issued "an order of conditions" in response to a "notice of interest" from the state to proceed with the project.
The next closest community to Taunton that will benefit from the DOI grant is Freetown. That town's Rattlesnake Brook Dam, which is owned by Fall River, is listed as being in "poor condition" and poses a threat to Narrows Road, described as "the only route in and out of residential area." Removing that dam should encourage the proliferation of eastern brook trout. "These dam removal projects will open up 189 miles for migratory and resident fish, and restore 90 acres of floodplain wetlands," said DFG Commissioner Mary Griffin, in a statement. Removing Barstow's Pond Dam is part of the state's Mill River Restoration Project, which so far has seen the removal of two privately owned Taunton dams on Mill River in Whittenton.
The first, a concrete spillway and earthen berm that originated in 1818 as Hopewell Mills Dam, was taken apart in 2012. The second was a rock spillway further downstream in a basin known as Whittenton Pond. That rock-and-boulder structure was built by the state in 2005 as a hasty replacement for the original dam — which generated news coverage when it nearly collapsed that summer. The latter spillway was demolished in 2013. The last dam on Mill River slated for demolition this summer and next fall is a small dam adjacent the Reed & Barton company on West Britannia Street. Lambert said she expects the Reed & Barton-owned dam will also be dismantled in the summer of 2015. Wildlife and ecological experts have said removing a series of privately owned dams in the region will restore a 30-mile stretch of fresh water extending from Taunton River Watershed to where it empties into Mount Hope Bay in Fall River and Somerset. Native species of trees and plants have been planted during the past two years along Mill River as part of the ongoing restoration project.

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Hydro:

(If it's free, why not?)

Council continues Arkansas River power plant effort

6/20/2014, By Will Chavez, Senior Reporter, cherokeephoenix.org

Tahlequah, Okla. – The Tribal Council's Resources Committee on June 16 approved a Cherokee Nation Businesses grant application to the U.S. Department of Interior-Energy and Minerals Development Program for a possible power plant on the Arkansas River. If received, the grant would be used to conduct studies and assessments necessary for constructing a hydroelectric dam in Sequoyah County. "This is the sixth grant we have received for this and this will probably be the last one. We'll go out after this and find funding for this project," Tribal Councilor David Thornton, who represents Sequoyah County, said. "This project is about a $132 to $135 million dollar project. I think it will really help us down the line because of the revenue it will produce." He said $2.5 million has been spent on dam studies and assessments. Thornton said with efforts being made by the federal government to use clean and renewable energy, the hydroelectric dam should be fit in its plans. The W.D. Mayo Hydroelectric Project would be owned and operated by the CN and use the Arkansas River's current to generate electricity. That electricity would then be sold to area cities. Thornton said he hopes the plant would generate funding for the tribe for the next 100 years and help Sequoyah County by generating 150 to 200 construction jobs when it is built. Workers would be needed for the plant's construction, road and power line construction, concrete batch plant operation, security and fence and barrier construction.

Local economic benefit from the plant's construction has been estimated at $532 million, Thornton said. He said the power sold would annually generate $10 million to $15 million in revenue for the CN after the plant's construction cost is paid. Congress authorized the project in 1986, and the CN has exclusive rights to build on the riverbed. On May 5, the U.S. Senate passed the Water Resources Development Act of 2013, which allows the CN to build the plant on the river. U.S. Sen. Jim Inhofe, R-Okla., and Congressman Markwayne Mullin, R-Okla., announced their support of the water resources bill. Principal Chief Bill John Baker praised their efforts for including of the W.D. Mayo Hydroelectric Project in the conferenced Water Resources Reform and Development Act. The lawmakers worked to include legislative language to allow the CN to construct, operate and market a hydroelectric facility. "We're glad this is now a renewable energy option for us and we look forward to exploring this and other opportunities," Baker said. "The Cherokee Nation is very thankful for Sen. Inhofe and Rep. Mullin's leadership and work to include the W.D. Mayo Lock and Dam in the WRRDA bill. Because of their support, we can explore more possibilities for renewable energy. I personally worked with both these lawmakers on this issue, and I couldn't be happier with the result."

(The more hydro, the better!)

Montgomery County to study potential of Norristown Dam for hydro-electric power

By Dan Clark, The Times Herald, 06/20/14, 3:58 PM EDT | timesherald.com

Norristown, PA — Montgomery County's Department of Assets and Infrastructure will apply for a grant to study whether the Norristown Dam can be turned into a hydro-electric dam sometime in the future, following the unanimous approval of a motion at Thursday's commissioners' meeting. "The county owns a very large dam right out here in Norristown. We assumed ownership of the dam from PECO in 1996. PECO was kind enough to reconstruct the dam as a passive 'maintenance free' structure to limit the county's cost of maintaining for as long as we own it," said Ken Starr, the county's director of assets and infrastructure. Starr said that while doing some

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research, he found a study performed by the Oak Ridge National Laboratory trying to identify nonpowered dams that have the potential for hydro-electrical development. The study listed the Norristown Dam as one of the dams that could be used for hydro-electric power. “The Norristown Dam was listed in the report as having the potential to generate over 12 million kilowatts a year,” Starr said. “This would be considered a small hydro project.” He further explained that 3,600 homes could be powered in Montgomery County if the dam were turned into a hydro-electric power source. If approved, the Alternative and Clean Energy Grant would fund a feasibility study to see if the dam is a viable candidate for hydro-electrical development.

“The study would look at the flow over the dam, they do a site mapping, they would come up with cost estimates to perform work to put hydro on it, what kind of systems up there that would be noninvasive and the most important part, they would study the environmental impact such a project would have on the area,” Starr said. The grant would provide $50,000 towards to the study and the county would have to match $50,000. Starr said the end goal is not for the county to be the developer or the operator of a dam, but rather to have an asset the county could sell to a large energy company or a developer. Commissioners’ Chairman Josh Shapiro said this is a good opportunity to see the Norristown Dam is something the county should continue to own or if it is time to sell it. “This also marries together another goal of this administration which is to create more energy efficiencies in the county,” Shapiro said. Commissioner Bruce L. Castor Jr., asked Starr if there was the potential for a hydro-electric dam to take care of the county government’s power needs. Starr said if, somewhere down the road, the project becomes viable, there are several options for the future of the dam depending on whom the county would partner up with for the project. “I’m particularly interested whether we can use this asset ultimately as a way of improving our operating budget and reducing our line item for electricity,” Castor said.

(Good investment for the future!)

Hydro dam purchase by city now official

By Jessie Perrine, 6/23/14, brainerddispatch.com

It's official. The city of Brainerd, MN is now the owner of the hydro dam, formerly operated by Wausau Paper.

All of the papers were signed and documents exchanged last week, said Scott Magnuson, Brainerd Public Utilities (BPU) superintendent. City council member Gary Scheeler, who serves on the Wausau Task Force and who first brought the idea of the dam purchase forward, said the move marks a "golden" investment. "I wouldn't sell it for $20 million. It's worth at least that to the city," he said. "It can generate $20 million worth of energy in 15 years."

The purchase price was $2.6 million, which is a drop from the original $4.115 million. It included 37 acres of land and a dam substation. The dam purchase, as well as the major upgrade projects, will be funded through local bonding. The biggest factors in the price drop are needed upgrades, including a $1.5 million spillway apron, as well as total generation equipment improvements at the cost of $600,000, which would most likely be spread over a five-year period.

Work will start sometime this year for the spillway, Magnuson said. Work for water and sewer connections to the site, which could cost about $330,000, will start in a couple of weeks. Automation improvements could cost $100,000 to $200,000, and should be completed in the next several months. The upgrades would allow the machines to run semi-automatically, therefore reducing staff levels from the current 24-hour-a-day operation to staffing just a single shift. "The dam and equipment are in good shape," Magnuson said. The only major issue, he said, was the

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spillway. "There's no downside," he said. "The only problem would be is if there's a natural disaster. Otherwise it's a win/win. It's free power." The dam will generate just under 10 percent of Brainerd's power on a normal day, BPU officials say.
Brainerd residents won't notice a big dip on their electric bill. Instead, it could help keep future rates more level or smaller. Another benefit, officials say, is that it's cheaper for the city to generate its own power. Currently, Brainerd buys all of its energy from Minnesota Power.
"It's going to be a good thing," Magnuson said of the purchase.

City council member Mary Koep, the sole voice of opposition in the purchase among the council, said buying the dam is a "mistake." Instead of saving residents money, Koep says it will instead be "very costly." "It's a disaster for the city," she said. "It's a terrible mistake. There's a lot of misinformation put out. That bothers me. The public has been kept in dark so much on this. Information has all been hush hush." Koep questioned how the city would repay the bonds, questioning the projected revenue that would be generated from the dam. Between maintenance, yearly inspection costs, insurance, wage costs and utilities, the annual cost to operate the hydro dam will range from $600,000-$700,000. The costs that are avoided are what offsets that, said Todd Wicklund, BPU finance director, in a previous interview. The city is expected to save $1 million that would have gone to buying energy from Minnesota Power, he said. It's a $250,000-$300,000 net benefit a year, Wicklund said. "It's still the best investment and time will prove it," Scheeler said. He added that there's already informal talk of extending a trail to the dam and adding a visitor site. Scheeler said the move puts Brainerd ahead of the curve when it comes to producing good, clean energy. "It's the way the economy is going," he said.

(And, don't forget the wind and solar costs have huge subsidies that you pay for. Gas is slightly cheaper now, just wait and see when they start exporting it!)

Renewing Industry With Ancient Tech: A Return To Hydropower

By Kerry Flynn Forbes Staff, forbes.com, 6/26/14

You don't have to invest millions in engineering the most optimal solar panel or innovative wind turbine to get ahead in the renewable energy sector. Instead, one Beverly, Mass.-based company has invested time and effort to understand the permitting process behind an older power source and has applied an ancient technology. New England Hydropower seeks to repower long-dormant mill dams to provide clean, reliable energy within states. "People have to repair dams. What if they could find a source of renewable energy while at the same time meeting the requirements in dam repair?" said CEO and co-founder Michael Kerr. Even at a small scale, hydropower is cost competitive to re-enter the area's energy portfolio as states adhere to renewable energy goals and grants. The technology is available, but the development process is burdensome. Each project requires a rigorous federal permitting and environmental impact studies that lower the incentives to build when the power supply is so small. "Certainly some developers have complained that some permitting requirements and onerous. We haven't seen a compelling case for making it easier," said Sue Reid of the Conservation Law Foundation. That's why New England Hydropower has grabbed onto capturing the entirety of market — studying, developing, and operating hydroelectric dams.

A rendering of a potential small-scale hydropower system on an eastern Connecticut dam site. (Photo credit: New England Hydropower)

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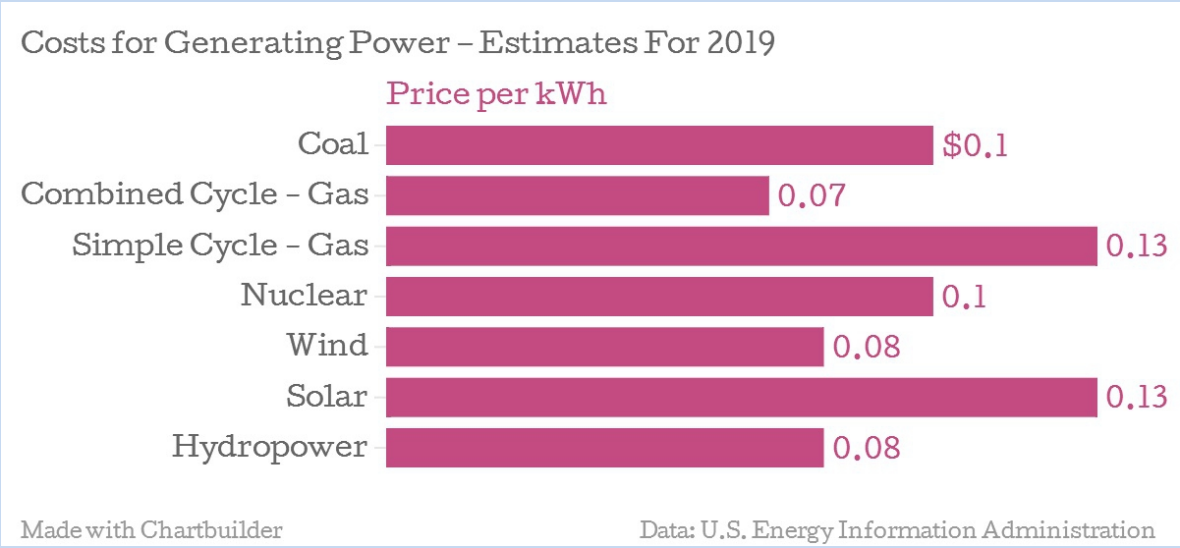
A native of England and now an American citizen, Kerr formerly worked for Shell Oil in London, United Technologies, and several startups before founding New England Hydropower in 2012. He uncovered the potential for implementing small-scale hydropower sites after his co-founder needed to repair a dam at his home in western Massachusetts. Kerr was familiar with the popularity of the hydropower technologies in the UK, France, and Austria and based his business on a product that has been used overseas. The technology is nothing new. In fact, New England Hydropower uses an ancient system called the Archimedes' screw, named after the third-century B.C. Greek engineer. Descending water turns the screw with an added gearbox that then drives a generator, thereby providing a slow-moving, run-of-the-river device that is easy to maintain and fish-friendly. This small-scale system has been installed throughout Europe, such as by Potential Energy Projects in the UK and Spaans Babcock of Holland, both of which have partnered with New England Hydropower.

Archimedes' screw systems have already been implemented throughout the UK, as pictured, and Europe. New England Hydropower is now bringing this ancient technology to the Northeast. (Photo credit: Chris Conover)

With the trusted system, Kerr knew the next, and more challenging, step was to navigate and identify the market. The company has spent the past two years studying thousands of dams in New England. Thankfully, the team did not have to drive to all 15,000 dams to analyze each of their potential but instead utilized public data — a strategy that brought them to the White House in May for the 2014 Energy Datapalooza.

From national data by the U.S. Army Corps of Engineers and supplementing with regional data, Kerr's team lowered the vetting to 800 sites. So far, New England Hydropower has identified 500 qualified sites. Now, the development process is underway as the company begins to woo potential customers with the Archimedes screw system and coordinates construction to dams' specific needs. After gaining permission from the municipality or private-dam owners, removal and development requires federal permitting and an environmental assessment. The company is currently at various stages of that process in several areas in the region. Chris Conover of New



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England Hydropower said that they hope to launch the first project in 2015. While large-scale hydropower has been a controversial topic in New England — most recently in a debate on whether to buy power from Canada — small-scale versions have the benefit of regional energy security and local jobs. The system has already gained the attention of towns in Connecticut and Rhode Island. “It’s an attractive dynamic today in terms of allowing local users control over power, whether it’s an industrial application or residential,” said Alicia Barton, CEO of Massachusetts Clean Energy Center.

Hydropower has become cost competitive, not far off from wind and solar. Massachusetts Municipal Wholesale Electric Company predicts that a proposed 300 kW site in New England would cost about $0.16 per kWh. The pricing is variable on a per dam basis, and Conover said that New England Hydropower has planned for dams between 10 to 500 kW. Other systems with larger reservoirs and higher capacities are able to sell at cheaper prices. The average cost of hydroelectric units across the country is $0.0845 per kWh as reported by the U.S. Energy Information Administration. Notably in the financing debate, hydropower is more reliable than other renewable technologies. Intermittence comes seasonally. As part of their research, New England Hydropower has been able to predict this reliability from long-range data, and therefore, vet cost effective sites. Kerr said that he believed the success of his company has come from the focused yet enterprising nature of the project. The technology may not be American-invented and made, but its implementation and development can be catered and controlled. By meshing a deep understanding of the politics and permitting in New England with partnered manufacturers in Europe, the company has been able to extend its reach. “We really kept it focused and from that we had the ability to attract some bright young people to move us forward,” Kerr said.

(Excerpts - Wish you could refinance a house for 2.6 %)

Full steam ahead for the purchase of generators

By Deb Nicklay Of The Press-News, globegazette.com, 6/26/14

Osage, IA | The move by Mitchell County to purchase the generators from Mitchell Mill Hydro at the Mitchell hydroelectric plant were resuscitated last week, when Alliant Energy said it would purchase the electricity at the contracted rate of 5.9 cents per kilowatt-hour. Questions were raised in recent weeks when County Attorney Mark Walk reported to the Board of Supervisors that he was not comfortable in assuring the county that Alliant would continue at the current rate when the contract was taken over by the county. Owners Peter Garratt, and the family of his brother, the late Gary Garratt, are ready to sell the plant to the county. However, without the contracted rate, revenue would fall well short of the expected return of about $120,000 a year, raising questions by supervisors if there was enough revenue to warrant the purchase.

But last week, Alliant changed course on the discussions, and assured the county that the contract would be assigned in its current state. The county will take out a loan for up to $650,000 to purchase the equipment. The loan would tentatively be structured on a 12-year payback at an estimated interest rate of 2.6 percent, with payments ranging from $50,000 to $60,000 a year.

The Mitchell County Conservation Board already oversees the dam and powerhouse, and will now take care of the generators. Mitchell Mill Hydro was established by the Garratts in the late 1990s after the generators had been silent for 30 years.

Water:

(This interesting article was sent by a Newsletter reader.)

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Colorado River researchers find signs of ancient, devastating floods

The researchers were initially motivated to study flooding on the Colorado River by concerns that tailings from a uranium mine might be washed into the river near Moab, Utah. (Tom Till / Associated Press)

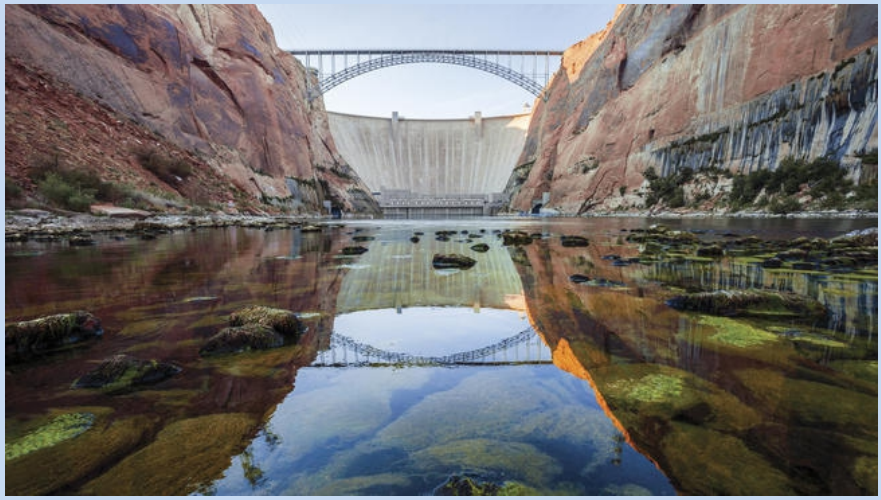
JULIA ROSEN, latimes.com

Most worry about the lack of water in the Colorado river, but what happens when there's too much? Colorado River floods raged wild and often in the last 2,000 years Modern measurements may underestimate the risk of Colorado River floods. Scientists say it would have been a catastrophe of unprecedented proportions. If the Glen Canyon Dam had failed, it would have changed the lives of millions of people and reshaped the history of the American West.

Only a lucky break in the weather spared the dam in June 1983, as floodwaters coursed through the Colorado River and its tributaries. They pooled in Lake Powell, causing water levels to creep upward at a rate of 3 inches per day. To avert disaster, engineers tried to shed water through the underground spillways, but the dam began to shudder and groan. The reason soon grew apparent: The water gushing from the base of the dam emerged as a red slurry of sediment flecked with chunks of ancient sandstone. The dam was being eaten away from below.

The scientists studied flood deposits on a section of the Colorado River near Moab, Utah that is popular for rafting. (Carl Dec). Now, geologic evidence suggests that the 1983 flood would have paled in comparison to events that occurred long before people started keeping track. These floods were larger and more frequent than modern estimates suggest, according to a paper published online recently in the journal Water Resources Research.

“If we’re thinking about rare, giant flood events, we need to look at more time than the decades represented in a normal stream gage,” said Victor Baker, a study author and geologist at the University of Arizona. Researchers contend that the short period of instrumental observations might miss extreme floods that happen only once a century, or even once a millennium.



To get a better perspective on ancient water levels, Baker and his colleagues floated down the Colorado River in search of spots where sediments might trap evidence of paleofloods. Signs of high water levels

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included driftwood deposits, or layers of fine silt that would otherwise be swept away by the river's swift currents. The scientists settled on a site near the mountain biking mecca of Moab, Utah, where the river tumbles through a deep canyon of layered crimson bedrock. The shape of the canyon has most likely remained the same for a few millenniums, meaning the scientists can compare flood heights in the past to flood heights measured today. When the scientists dated the deposits, they tallied more than 40 large floods in the last 2000 years. Of these, 34 exceeded floods expected to strike once a century, and 26 dwarfed the so-called 500-year flood. That means that although current models predict truly epic floods twice every millennium, there really might be as many as 13. Researchers say two massive paleofloods proved even worse than scenarios now used by engineers and planners to prepare for future disasters.

The Glen Canyon Dam nearly gave out during snowmelt-fed floods in 1983. (Ben Knight / DamNation Collection). After being retrofitted in 1984, the Glen Canyon Dam remains unprepared for the maximum flood size predicted by theory, Baker said, let alone the beasts he discovered. The disparity between the paleoflood record and modern estimates of flood size and frequency may be due to several reasons. First, Baker said, sediments do a good job of preserving big floods but flood gages don't; if they do happen to record a big event, they often break.
Second, without a robust data set of rare, severe floods, scientists using gage records must extrapolate what they know about small, annual floods to make predictions about extreme events. "You are trying to estimate the tail of the distribution from the middle of the distribution," said Jim O'Connor, a hydrologist at the U.S. Geological Survey in Portland, Ore., who was not involved in the study. He says finding just one or two big events in a thousand-year interval improves scientists' understanding of flood probabilities as much as several centuries of gage measurements. "It's not something theoretical," said Noam Greenbaum of the University of Haifa in Israel, the lead author of the study. "What we are actually documenting are the natural floods." Determining these natural levels can be tricky, though.

In the last century, more than 100 dams have sprung up between the Colorado's snowy headwaters in the Rocky Mountains and its delta in Mexico. The river now quenches the needs of seven thirsty states and two countries. It is hardly the same river today that it was when these floods occurred. Using information about paleofloods poses the risk that decisions "could be made based on conditions of the past that are not applicable for the future," wrote the Army Corps of Engineers in a 2013 report that expressed mixed feelings about the utility of paleoflood records for modern risk assessment.
But Baker thinks this does not merit excluding the data. It is common sense, he said, that what has happened could happen again. The changes that have transformed the Colorado don't necessarily decrease the chances of large floods. Engineers did not design its dams for flood control, they sought to provide water storage and hydropower — "and that works best when dams are full," Baker said. As illustrated by the events of 1983, purging water from the reservoirs before a flood hits presents its own set of challenges. On top of all that, the specter of climate change looms over the river and its uncertain future. "Nature is variable," Baker said. The Southwest has suffered in the wake of recent droughts, but the long-term history of the region suggests that can change quickly.
"If we are entering a phase because of our changing climate where the extremes are being enhanced, we could see a period of extreme wet," Baker said, "It may sound like a good thing, but it would be a serious hazard concern." Greenbaum cites the uncertainty of future change as a strong argument to seek out long-term flood records to complement the gage measurements of the 20th century. "During the last 2,000 years, the climate changed a lot. It was maybe sometimes wetter, different periods were dryer," he said. "Two thousand years is the best record you can have to show what really happened and this is a much more firm basis if you want to predict the future." In the end, however, Baker and Greenbaum agree that it's not up to scientists to decide what to do with this knowledge; it's a job for engineers. But they do think the record deserves some attention. "Ignoring Mother Nature is not too smart," Baker said, "but that's just a personal opinion."

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Other Stuff:

(Let's be factual. Nothing comes close to hydro's efficiency and costs – unsubsidized!)

An energy primer

June 22, 2014, by Toby Talbot / rutlandherald.com

1. Fracking

Widely criticized, "fracking" to increase oil and gas production is used worldwide. Its use in the United States has allowed our domestic production of oil to increase to where it accounts for about 50 percent of our needs.

Fracking like any exploration or mining operation can be done in a manner that minimizes the environmental impact. To assure that this is done requires strong environmental oversight. This in turn requires a strong government with a concerned citizenry. The U.S. and Canada and most of Europe meet these criteria. The other 50 percent of our oil comes from countries like Venezuela, Nigeria and the Middle East that have little regard for the environment and cannot even provide their people with basic human rights. To make matters worse most of them despise us. The next time you buy gasoline or fuel oil, remember that one-half of your money may go to support fracking and the other half goes to support the enemy. It is true that Vermont Gas comes from Canada, and some of our money goes there. Thirty percent of our electricity comes from Hydro-Quebec and is much touted as part of Vermont's renewable energy portfolio. Is paying our good friends to the north for natural gas any different than paying for electricity?

2. Renewable energy

Everyone wants more renewable energy: wind power, hydropower and solar. This is a wonderful goal, but not easily obtained and has its own environmental problems.

Hydroelectric power, such as that generated in Wilder, is among the renewable energy sources increasingly relied upon in Vermont.

Wind power and solar power are heavily subsidized with your tax dollars. Wind power installation often results in extensive damage to the environment with the construction of mountain top roads and transmission lines. The manufacture of solar panels requires large amounts of electrical energy and significant use of chemicals. As a result most solar panels are manufactured in China where cheap coal-fired electricity and lax environmental regulations reduce costs. Hydropower is one of our oldest proven economical sources of renewable energy and is widely used. Its environmental impact is moderate providing you are not a salmon, Native American or a caribou. The attractive nature of hydropower is that, within limits, it is there when you need it.

Wind and solar power are intermittent sources of power. Solar only works when the sun shines. Wind power is subject to the variability of the wind, which makes its introduction to the electric power grid difficult. To compensate for the unpredictability of wind and solar, power companies are turning to the use of gas turbine generators which can be quickly brought on line when needed. These turbines burn natural gas, thus increasing use of wind and solar may actually increase the burning of natural gas. One of the benefits of natural gas is that it burns cleanly and easily meets environmental regulations. Unfortunately, when natural gas is used to generate electricity in a

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turbine, the laws of thermodynamics limit its thermal efficiency to about 30 percent, whereas natural gas burned in a home or industrial furnace to supply heat easily gives a thermal efficiency of 90 percent. In my opinion, burning gas to generate peak demand electricity is a waste of a valuable natural resource.

3. Heat and the Vermont economy
Vermont industries require a lot of energy for heat — not only to heat the buildings they occupy, but for their manufacturing processes. Brick making, cheese making, brewing, chocolate making, paper making, casting foundries are a few examples. These industries are vital to the state's economy and provide good-paying jobs. Natural gas is the ideal energy source for this use. It burns with high efficiency, is versatile and clean and competitively priced. Homes in higher density housing areas near gas lines may also benefit from this heat source. Those Vermonters that live in rural areas unfortunately are stuck with wood, oil or propane.

4. Safety
The transportation of any fuel has hazards associated with it. Tank trucks go off the road, railroad trains derail. Pipelines do fail, but the incidents are rare compared to other forms of transportation. If the residents of Addison County want a cause to pursue, they should examine the potential for environmental disaster to Lake Champlain from the 300 crude oil tank cars per day that trundle down the shoreline of Lake Champlain. Not only a dangerous situation — remember Lac Megantic in Quebec — but an environmental disaster waiting to happen: The inadvertent dumping of thousands of gallons of crude oil in Lake Champlain would dwarf any environmental disaster that a pipeline carrying methane under the lake could possibly produce.

5. Property values
The installation of highways, power lines, pipelines, wind turbines, solar arrays can and will affect property values. Determining the effect is highly subjective. In the case of a Vermont gas pipeline, however, we do have some history to look back on.

In the mid-1960s the Franklin County Regional Planning and Development Commission was tasked with producing a regional development plan. At the same time Vermont Gas was installing their gas pipe line through Franklin County to Burlington. The installation of the pipeline was for the most part a non-event for a number of reasons. Franklin County at the time was rural, agricultural and the economy was severely depressed. Interstate 89 had just been completed to the border with Canada a few years before and was a much more contentious project than a little pipeline. Owners of the land the pipeline passed through were generally pleased with the compensation allowed by Vermont Gas, and few complained. The planning commission barely considered the pipeline in its regional plan. Why? Because those were the days of cheap energy. Gasoline was inexpensive, and home heating oil was, as I remember, about 60 cents per gallon. People building new homes were installing electric heat.

Unfortunately, those days are past. The following 40-plus years saw energy costs skyrocket, and at the same time industries started moving into Franklin County's industrial parks, most of them, taking advantage of natural gas. The economy of Franklin County improved dramatically, and it now has one of the lowest unemployment rates in the state. So what happened to land values? Overall they went up with the economy. Individually, of course, there were variations. Where the pipeline went through farmers' cornfields and hayfields, which are still cornfields and hayfields, the benefit to the landowner aside from the original compensation was just the general increase in land values. For some landowners who were lucky enough to own land suitable for development, proximity to natural gas increased property values significantly. Will land values change in Addison County as a result of the gas line? No one can really say for sure. Short-term land values probably won't change much. In the long term all we can say, based on previous experience, is that a good economy increases land values.

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