Reader-Supported News for Philipstown and Beacon

The HIGHLANDS Current

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Pear Apparent

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Shipping for a Small Planet

Schooner brings carbon-free shipping to the Hudson

By Brian PJ Cronin

Sam Merrett is the captain of the Apollonia, a 64-foot restored sailboat from the 1940s that last year began acting as a carbon-neutral shipping vessel, delivering goods up and down the Hudson River powered only by wind.

In advance of the ship's next voyage, Merrett spoke this week from his home outside of Hudson about seasonal shipping, healthy competition and why "good weather" means something different to a sailboat shipper than it does to people on terra firma. The Apollonia may make a stop in Garrison early next week.

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Capt. Sam Merrett (left) and Roman Horst, a crew member, aboard the Apollonia in the Highlands

Photo provided

Photo by Alexa Strudler

OPERATION Infrastructure

Congress is about to pass a $1 trillion bill to fix roads, bridges, dams and water systems. What does it mean for the Highlands?

By Chip Rowe

Many parts of the Hudson Valley, New York and the U.S. need serious upgrades.

The Highlands have some trouble spots but overall seem to be in good shape. Mayors and highway and water superintendents are optimistic about the state of our roads, bridges, dams, drinking water and sewage systems.

After four years of stalemate with then-President Donald Trump, only recently has Congress advanced spending bills to address the problem of crumbling infrastructure. On Aug. 10, the Senate agreed, on a 69-30 vote, to send $110 billion to the states over the next five years to fix aging roads and bridges and $55 billion for water infrastructure. The House is expected to vote on the proposal by the end of the month.

The Highlands still have challenges, and the money expected to flow from the U.S. Treasury to the states and then to counties and municipalities could have a substantial effect both on the condition of our shared resources and in creating jobs — although finding enough skilled workers to fill those jobs could be a problem that wasn't anticipated. It's another issue of many that may spiral out of the huge influx of cash.

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Zoning Change Could Shape Marathon Site's Future

Would allow homes, offices, retail, parking on empty Kemble lot

By Michael Turton

A proposed zoning change could determine the future of the former Marathon Battery property, Cold Spring's last remaining, significant tract of undeveloped, privately owned land.

The classification of the nearly 12-acre field on Kemble Avenue, zoned Office-Light Industry, will change to Mixed Use as part of an ongoing update of the Village Code. That revision was one of many presented at a public hearing on Sept. 7, which considered four existing chapters of the code and one addition.

In addition to the property on Kemble, the eastern portion of the south side of

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Infrastructure *(From page 1)*

The need for an infrastructure upgrade should not be a surprise. For years and decades, groups such as Hudson Valley Pattern for Progress and the American Society of Civil Engineers have been sounding the alarm, noting that the state of our shared resources is a reflection of the nation's economic vitality. Poor roads, bridges, dams and water systems make markets less efficient and life more expensive.

Every four years since 2001, the ASCE has compiled a report card on U.S. infrastructure. In their most recent, released this year, the engineers said they were hopeful, giving a grade of C-, an improvement over the D+ of 2017. It was the first time the grade had risen. By ASCE's calculation, there is a national "investment gap" in infrastructure of $2.59 trillion, including $1.2 trillion for roads, $434 billion for water systems and $81 billion for dams.

That's about the same gap — on a different scale — calculated nearly 10 years ago by New York Comptroller Thomas DiNapoli when he issued a report on the challenges facing local governments called *Growing Cracks in the Foundation*. He concluded that the rising costs of construction, fuel and asphalt were preventing many local projects from being completed and cited a study that projected local governments would need to spend $3.9 billion annually on local roads and bridges and water and sewer systems. At the time, they were spending $1.2 billion.

Rep. Sean Patrick Maloney, a Democrat whose district includes the Highlands, sits on the House Transportation and Infrastructure Committee. I asked him last week how the money will get from Washington, D.C., to our district.

"Typically what happens is that the federal dollars are funneled through the state Department of Transportation [DOT], according to the governor's priorities," he explained. "There are also funds [in the bill] for specific things, such as billions of dollars for commuter rail — Metro-North will do very well — and billions for water infrastructure.

"If you think about sewer and stormwater projects, those are important in communities with older infrastructure such as Beacon," he said. "There are [environmental] requirements around drinking water and stormwater runoff, and cities have trouble meeting it, so they get in situations where they are at odds with regulators but they don't have the resources to fix it."

The bill could also fund earmarks, or money set aside for specific uses such as a Philipstown highway garage, that governors can't divert, or a bill introduced by Maloney to fix thousands of small community bridges across the country that are structurally deficient. "We have 1,700 of them in New York state alone," he said.

Rep. Sean Patrick Maloney, a Democrat whose district includes the Highlands, at a news conference in May announced he had introduced six infrastructure bills (see right). *Photo provided*

Given the gaps that the ASCE and others have identified in what is needed, and what this bill will provide, is it going to be enough? "I wouldn't get too hung up on that," Maloney said. "If you're spending what we're talking about in the bipartisan deal, you're talking about a significant increase in state DOT budgets, upward of 30 to 40 percent in some cases.

"That will allow the state to move further down the list of projects it has been holding off on because it has not had a guarantee of funding," he said. "One of the things that's so important about passing a five-year bill like this is that the state can issue contracts for a large number of projects next year and not have to wonder if the money will be there to finish them."

Asked what he thought of ASCE's most recent grade for New York infrastructure (C-), he said: "That sounds about right. We're not at the bottom but we're not where we should be.

"One of the great things about New York is that our parents and grandparents made big investments in infrastructure, and that has given us the growth and the economic power that defines the state," he said. "We need to continue those investments because so many were made 70 or 80 years ago and the useful life of those projects is ending. We can be an 'A' but we need to invest again."

In Dutchess, Marc Molinaro, a Republican who is midway through his third term as county executive, does not share Maloney's optimism about the infrastructure money expected to come out of Washington.

Molinaro says he fears that the billions of dollars sent to New York will get tied up in Albany red tape and be distributed only to "shovel-ready" projects that may not address long-term needs.

That, he says, is what happened after President Barack Obama signed an $831 billion infrastructure bill in 2009 and, to an extent, it's happening with American Rescue Plan funding distributed in response to the pandemic shutdown.

"I have seen every transportation bill that anyone has ever talked about in nearly 30 years, and this state squanders those resources and doesn't direct enough of the aid onto the ground," said Molinaro, who served in the state Assembly from 2007 to 2011 and ran for governor in 2018. "And I fear that that is going to be repeated.

"Historically, almost 80 percent of those federal dollars flow through Albany decision-making," he said. "We used to say that the state has this collar on Department of Transportation expenditures, and it's not going to let more than a few million dollars through that collar at any given time.

"Albany would tell us which [transportation projects] they want to move with. And if you're not ready to go, it's not happening," he said. "The last time we did this, we saw a great amount of guide rail enhancements, because those were the things you could move on quickly."

Although the word *infrastructure* can encompass many areas, including public buildings, schools, energy, levees, ports and parks, we will take a closer look at four. This week Jeff Simms focuses on roads and Leonard Sparks on bridges; next week Brian PJ Cronin tackles dams and Michael Turton water and wastewater.

Jeff Simms contributed reporting.

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Infrastructure Bills

In Newburgh in May, Rep. Sean Patrick Maloney announced that he had introduced six bills intended for inclusion in the infrastructure legislation, including to:

- Fund repairs to New York's 1,757 structurally deficient bridges;
- Restore a lapsed 2012 program to provide $325 million to communities across the country for scenic byways;
- Ban Chinese state-owned enterprises from receiving taxpayer funds for highway, transit or rail projects;
- Create an infrastructure bank to provide loans and bond guarantees for projects and make equity investments;
- Require the federal Department of Transportation to investigate any structural defects in the Gov. Mario M. Cuomo Bridge; and
- Create a grant program for utility companies to protect power lines against extreme weather.

What is Infrastructure?

The word infrastructure was first used in 19th-century France in the context of railroad planning. During World War II, NATO military planners adopted the term to signify any "fixed installations which were necessary for the effective deployment and operations of modern armed forces."

Adam Smith may have described infrastructure as "public goods" undersupplied by private markets; economists refer to roads, bridges, ports and water systems as part of the "nation's physical capital"; in the early days of the Republic the Whigs would have called for more public support for "internal improvements" like canals and turnpikes.

Today, President Obama might call for more investment in "nation-building at home." The term infrastructure, as we know it today, finally made its way into public discourse in the late 20th century when it replaced "public works" and is used to describe the physical and organizational structures and facilities (e.g., buildings, roads and power supplies) needed for the operation of a society or enterprise.

~From Infrastructure: An Investment in the Future, a 2016 report by Hudson Valley Pattern for Progress

Bridging The Gap

Federal bill could boost funding for crossing work

By Leonard Sparks

The 86-year-old bridge carrying Sprout Brook Road in Philipstown over Canopus Creek is scheduled to be replaced at a cost of $1.6 million. *Photo by L. Sparks*

In 2019, the state spent $2.2 million on repairs to the Indian Brook Bridge on Route 9D, which was a single lane for much of the summer. *File photo by Michael Turton*

For more than seven decades, the bridge on Sprout Brook Road in Garrison has been attacked by multiple foes.

The weight of personal and commercial vehicles, storms that are becoming more frequent and powerful because of climate change, the waters of Canopus Creek and time have corroded the 27-foot span's steel girders, eroded its concrete to expose rebar and eaten into the footings of the bridge's abutments.

Two years ago, in a report by TRIP, a research organization based in Washington, D.C., that focuses on transportation issues, the bridge was one of two in Putnam County and 25 in the Hudson Valley with the lowest ratings for the condition of their decks and supports. (The other is the Oscawana Lake Road crossing over Peekskill Hollow Creek in Putnam Valley, built in 1964, which the county said on Sept. 15 it planned to widen.)

The damage at Canopus Creek is so bad, that Putnam is in the process of completing a design for a new 28-foot replacement, with construction scheduled to finish by September 2023 at a cost of $1.6 million.

The project highlights both the stresses on local bridges and the importance of state and federal funding to maintain, repair and sometimes replace structures that in some cases are more than a century old.

One of the Highlands' most-attractive features — a collection of water bodies ranging from the Hudson River to small creeks and streams — requires bridges catering to an ever-growing variety of users, including residents, vacationers, trucks hauling merchandise and buses ferrying students and workers.

The region's network of crossings includes six bridges in Beacon and 14 in Philipstown, according to the state Department of Transportation. They range from the bridges carrying traffic on Route 9D and Churchill and East Main streets in Beacon over Fishkill Creek to multiple bridges and culverts in Philipstown that traverse Clove Creek and the bridge on 9D spanning Indian Brook in Garrison.

More than half of the state's bridges are owned by local governments, and many are at least 70 years old.

The oldest bridge in Beacon, the one spanning Fishkill Creek on East Main Street, was built in 1911. The bridge carrying Horton Road over Clove Creek in Philipstown was built in 1925. Three other bridges in Beacon were built between 1915 and 1933, and nine of Philipstown's bridges were built in 1940 or earlier.

Besides the crossing on Sprout Brook Road, the only other local bridge rated in poor condition is the one in Cold Spring on Lunn Terrace, which is owned by Metro-North. The agency said this week it has no maintenance scheduled.

Under state law, bridges in New York must be inspected annually, and their condition is ranked on a scale that ranges from 0 (closed) to 9 (excellent). The bridge where Route 9D crosses Fishkill Creek in Beacon, built in 1933 and owned by the city, has a rating of 5, meaning it is in "fair" condition, according to the National Bridge Inventory, a database overseen by the Federal Highway Administration.

The condition of the span where 9D crosses Indian Brook in Garrison is also rated as fair, although the state spent $2.2 million in the summer of 2019 to replace joints, add a drainage system, repair piers and abutments, seal the deck and pave its approaches. Still, the Federal Highway Administration has recommended the bridge be widened and its deck rehabilitated a cost of $25.8 million. It also recommends spending $11.6 million on the Route 9D crossing over Fishkill Creek in Beacon.

Carl Frisenda, the Philipstown highway superintendent, says that while he usually chooses one bridge each year to include in the budget for repairs, the town's bridges are in good shape.

The most recent major work was on the span on Horton Road over Clove Creek where the footings were being washed out and the stonework was crumbling. The steel undergirding also needed maintenance. And last week, a hole appeared in a 15-foot span on East Mountain Road North, just past the Beacon reservoir. Highway crews noticed the

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A Bevy of Bridges & Culverts

BEACON	CROSSES...	OWNED BY	BUILT
East Main Street	Fishkill Creek	City	1911
Dennings Point Road	Metro-North RR	State	1915
Route 9D & Fishkill Creek	Fishkill Creek	City	1933
Churchill Street	Fishkill Creek	City	1979
Beekman Street	Metro-North RR	City	1991
9D & Metro-North Railroad	Metro-North RR	MNR	1998
COLD SPRING			
Lunn Terrace*	Metro-North RR	MNR	1930
PHILIPSTOWN			
Horton Road (0.4 miles east of Rte 9)	Clove Creek	Town	1925
3.4 miles south of Rtes 9D & 301	Foundry Brook	State	1929
2 miles south of Rtes 9D & 301	Indian Brook Road	State	1929
0.8 miles north of Rtes 9D & 403	Philipse Brook	State	1929
East Mountain Road North	Beacon Reservoir outlet	Town	1935
Sprout Brook Road* (3.7 miles northeast of Peekskill)	Canopus Creek	County	1935
0.7 miles east of Rtes 301 & 9	Clove Creek	State	1938
1 mile east of Rtes 301 & 9	Clove Creek	State	1938
3.6 miles north of Rtes 9 & 30*	Clove Creek	State	1940
East Mountain Road South	Clove Creek	County	1965
Old Albany Post Road (3 miles SE of Beacon)	Clove Creek	County	1984
Upper Garrison Street	Metro North RR	MNR	1990
3.5 Miles south of Rtes 9 & 301	Philipse Brook Road	State	2000
Mill Road (5 miles NE of Cold Spring)	Clove Creek	County	2017

*Source: NYS Department of Transportation. * Rated "poor"*

Bridging the Gap (From page 8)

hole before Tropical Depression Ida brought heavy rain to the area on Sept. 1 and 2, but the storm "opened it up," said Frisenda.

"We're going to have to patch that for now until we figure out what we're dealing with," he said.

While fixes and upkeep of the Bear Mountain and Newburgh-Beacon bridges are funded by tolls — the deck on the westbound span of the Newburgh-Beacon Bridge is being replaced in a project scheduled for completion in July 2023 — counties and municipalities like Beacon and Philipstown have to rely on their own residents and whatever state and federal funds they can secure. Putnam is underwriting the design and construction costs for the Sprout Brook Road bridge with $1.5 million it received through BridgeNY, a state program created in 2016 to fund bridge and culvert repairs. Philipstown mostly pays for bridge work using town funds, said Frisenda.

"There's stuff that I would like to do, but it's a limited budget," he said.

Those budget constraints affect every municipality in the Hudson Valley, where 13 percent of the 2,251 bridges that are 20 feet or longer are in poor shape, with significant deterioration of the decks, supports or other major components, according to a 2019 assessment by TRIP.

The American Road & Transportation Builders Association, using federal data, estimates repairs totaling $3.2 billion are needed on 1,676 bridges in the 18th Congressional District, which includes the Highlands. Of those, 194 are "structurally deficient," according to the association.

BridgeNY's third round of funding, announced in January, has $150 million available for local bridges, or $50 million less than in 2018. The infrastructure money expected to come from Washington could close the gap. The $1 trillion bill passed by the U.S. Senate on Aug. 10 that awaits action in the House includes $1.5 billion for bridge repairs in New York state. More than half the funding, $550 billion, is new money, including $40 billion for replacement, repair and rehab.

Most bridges were designed to last 50 years, according to the American Society of Civil Engineers. Funding shortages mean many local governments cannot afford preventative maintenance to extend the life of a bridge and prevent major work, said Bruce Geiger, state governmental affairs representative for the New York State County Highway Superintendents Association.

"Once you start falling behind, it gets hard to catch up," he said. "That's when you start posting bridges [to limit capacity] and closing bridges. In most cases, they're either way past their useful life or they were built so long ago they didn't have the kind of traffic that they do now."

Although BridgeNY has awarded $450 million to 179 bridge and 118 culvert projects since 2016, and is an "important source of work," only 36.6 percent of requests for bridge money and 13.4 percent for culverts were approved, said Geiger.

The state also distributes money for bridges through its Consolidated Local Street and Highway Improvement (CHIPS) and Extreme Winter Recovery (EWR) programs.

Each municipality gets funding from the CHIPS program under a formula, Geiger explained. The program is flexible, allowing money to be spent on roads, bridges, culverts or equipment, he said. Municipalities spend the money and apply for reimbursement.

The state budget passed by lawmakers in April was "particularly good" for local road and bridge funding, said Geiger. It increased funding for CHIPS by $100 million to $538 million and for the EWR program by $35 million, to $100 million.

"Things are getting better; we're hoping that we continue that level of funding, and that level of commitment, going forward," he said.

How Do We Pay for It?

That's a good question and was the sticking point in many of the discussions between then-President Trump and Democrats in Congress.

In 2018, Trump proposed $200 billion in federal funding paired with $1.5 trillion in private investment and hinted at tolls on all federal highways, which didn't go over well with the fleet industry. Public-private partnerships are attractive because they require less taxpayer money but carry the risk of "abdicating control of public property to private interests," notes civil engineer Henry Petroski in his book, *The Road Taken: The History and Future of America's Infrastructure.*

One relatively simple measure would be to raise the federal gas tax, which has been 18.4 cents per gallon since 1993, but many elected officials are reluctant to do that. It funds highway repairs but has suffered because hybrid and electric vehicle owners don't pay as much or any of the tax.

Other novel ideas have surfaced, such as from the Construction Industry Council of Westchester, which has proposed that tax revenue generated by the legalization of marijuana could be spent on infrastructure in a plan it called "Pot for Potholes."

Rep. Sean Patrick Maloney, a Democrat whose district includes the Highlands and who sits on the House Transportation and Infrastructure Committee, argued that the $1 trillion bill pending in the House passed with bipartisan support in the Senate (69-30) only because Democrats made it easy for Republicans to vote for it by removing the funding mechanism, which is higher taxes on corporations and ultra-rich Americans.

Without that, he said, "we've given the Republicans the chocolate-chip ice cream of infrastructure investments. We're going to do that heavy lifting [of funding the bill] without them, so that has made it politically easy for them, and that creates a space for more bipartisanship on core infrastructure."

Emily Warren Roebling, after receiving her law degree in 1899 (left), was instrumental in building the Brooklyn Bridge.

New-York Historical Society (1)

The Greatest Bridge Ever Built

And the Cold Spring woman behind it

By Chip Rowe

The Brooklyn Bridge, which opened in 1883, is considered an architectural marvel, and the woman who led its construction for years, Emily Warren Roebling, was a native of Cold Spring.

The bridge linking Manhattan and Brooklyn was designed by John Augustus Roebling, who died in 1869 from an injury he received while surveying the site. (He developed tetanus after his foot was crushed.) His 32-year-old son, Washington, took over as chief engineer but developed "caisson disease" (decompression sickness) when he ascended too quickly from the dry underwater space where the foundations were being dug to solid rock.

He was bedridden for most of the next 14 years, watching the construction in the distance from his window, while his wife, Emily, became the de facto supervisor of the project.

Born in Cold Spring in 1843 as the second youngest of the 12 children of Sylvanus and Phebe Warren (six of whom survived to adulthood), Emily attended prep school in Washington, D.C. She met her husband in 1864 at a soldiers' ball; he served on the staff of Gen. Gouverneur Kemble Warren, Emily's brother.

Emily was the first person to cross the completed bridge by carriage, carrying a rooster as a sign of victory.

She died of stomach cancer in 1903, at age 59, at the couple's home in Trenton, New Jersey. She and her husband, who died in 1926, are buried under runic crosses in the Cold Spring Cemetery. The 1840 home on Fair Street where Emily and Gouverneur and their siblings grew up still stands.

How They Rated

In 2016, Hudson Valley Pattern for Progress surveyed 132 municipalities in the Hudson Valley, including some in Dutchess and Putnam counties, asking each to rate the conditions of their roads and bridges.

37
percent of respondents said their bridges needed only routine maintenance

22
percent said some bridges were in danger of imminent failure

55
percent said their roads were in "poor" or "fair" condition

Report Card

Every four years, the American Society of Civil Engineers rates the nation's infrastructure. In 2015, it also graded New York's.

	NATION	NEW YORK
OVERALL	C -	C -
BRIDGES	C	D+
DAMS	D	C -
DRINKING WATER	C -	C
ROADS	D	D -
WASTEWATER	D+	D

Road Warriors

Highlands communities contend with traffic, erosion and expense

By Jeff Simms

As Congress prepares to send billions of dollars to repair and repave the country's highways and roads, local officials say routes in the Highlands are generally in good shape. A state database shows mostly routine maintenance being planned for Dutchess and Putnam counties, including paving sections and repairing retaining walls on Interstate 84 and the Taconic State Parkway.

In Beacon, the city has a multiyear plan in place to repave the road and build new sidewalks along Teller/Fishkill Avenue (Route 52), from Wolcott Avenue (Route 9D) to the city's northeast boundary. The city is nearing completion of right of way acquisitions to install new stormwater drains, after which the two-year project is expected to go out to bid in 2022, said City Administrator Chris White.

Following the completion of "bump-out" curb extensions at six intersections, the city also plans to mill (remove the top layer of asphalt), pave and restripe Main Street this fall.

Highway Department crews typically mill and pave 10 to 20 road sections each year, depending on weather and what's needed, said White, who will present a one- to two-year capital plan to the City Council later this year.

Beyond dam repairs and the renovation of the Tompkins Hose fire station — higher-dollar projects that have been in the pipeline — he doesn't expect it will include any surprises. "I'm benefiting from years of thoughtful investment," he said. "The state of repair of our infrastructure is much better than when I was here in the mid-1990s" as a council member.

Beacon's Main Street was constructed in the late 1800s and early 1900s, when the automobile was a novelty. But these days, with the city and many of its businesses thriving, delivery trucks routinely slow traffic on the narrow, mile-plus-long artery.

White said he anticipates further evolution, as people depend more on public transit to get from the riverfront Metro-North station to Main Street. This month, the city submitted an application for a $10 million state Downtown Revitalization Initiative grant with highlights including a public bus connecting the river and Main, a series of transit- and walker-friendly pocket parks along Main Street, and the creation of bicycle boulevards linking parks, schools and commerce.

John Amato of Thalle Industries holds a core removed from newly laid asphalt to test its durability. The quarry, located on Route 9 in Fishkill, provides much of the asphalt and crushed stone used to build or repair local roads. *Photo by Michael Turton*

"The good thing is that people want to be on Main Street," the city administrator said. "As it gets congested, it encourages non-motorized transportation. Maybe you don't need to take your car to get a gallon of milk. Congestion isn't always the worst thing."

If an infrastructure bill is passed, White said that in addition to wastewater, sewer and dam upgrades, he would use federal dollars to offset the city's 20 percent share of the Fishkill Avenue/Teller Avenue project. Beacon could also address rebuilding Pocket Road, a steep and narrow road on the city's east side that gives way to trails leading to one of its three reservoirs, he said. White estimated that project would likely cost $200,000.

Frisenda

Less than 10 miles away, Highway Superintendent Carl Frisenda oversees an entirely different animal in Philipstown, with 30 miles of blacktop and 30 miles of dirt roads.

While Frisenda estimates that most municipalities manage road networks that are at least 90 percent blacktop, many Philipstown homes sit on steep, skinny dirt roads that have been the subject of debate for decades.

Many residents would like to see the roads paved, citing the expense of maintenance. Others oppose paving, citing the roads' rustic appeal and arguing that they slow traffic.

Federal infrastructure money could help Beacon rebuild Pocket Road. *Photo by J. Simms*

Regardless, "I have a crew on them every single day," Frisenda said.

Workers begin each spring to rebuild the roads by adding gravel, raking them and using compactors to pack the materials together. But huge storms, like the "remnants" of Hurricane Ida that tore through the region earlier this month, wreak havoc.

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> "Quality roads are one of the real foundations for quality of life. Unfortunately, in some places you have to choose your route not based on what's the shortest trip but based on what will do the least damage to your car."
>
> **~ Assembly Member Jonathan Jacobson**

Rough Roads

The condition of the 42,700 miles of highway maintained by New York State has begun trending downward after holding steady since 2015, according to a report by Comptroller Thomas DiNapoli. Between 2019 and 2020, he noted, the number of highway miles rated only poor to fair jumped 4.4 percent.

Road Warriors (From page 10)

"When we get massive amounts of rain, water and dirt don't mix," Frisenda said. "Years ago it wasn't as bad because you didn't have as much traffic." But now, with the proliferation of delivery trucks and other vehicles, "the amount of traffic on these back roads is crazy."

Last year, the town paved 1,100 feet of dirt road, connecting East Mountain Road South and North. If increased federal funding makes its way to the Highlands, Frisenda said one priority would be to realign the problematic intersection of South Mountain Pass and Route 9D.

To address the Highlands' crowded roadways, Dutchess County Executive Marc Molinaro said he would rather see money invested in projects that are the product of regionally coordinated planning. For example, he points to the bottleneck at the Route 9D/Interstate 84 interchange just outside of Beacon, which, at rush hour, can leave cars backed up nearly to City Hall.

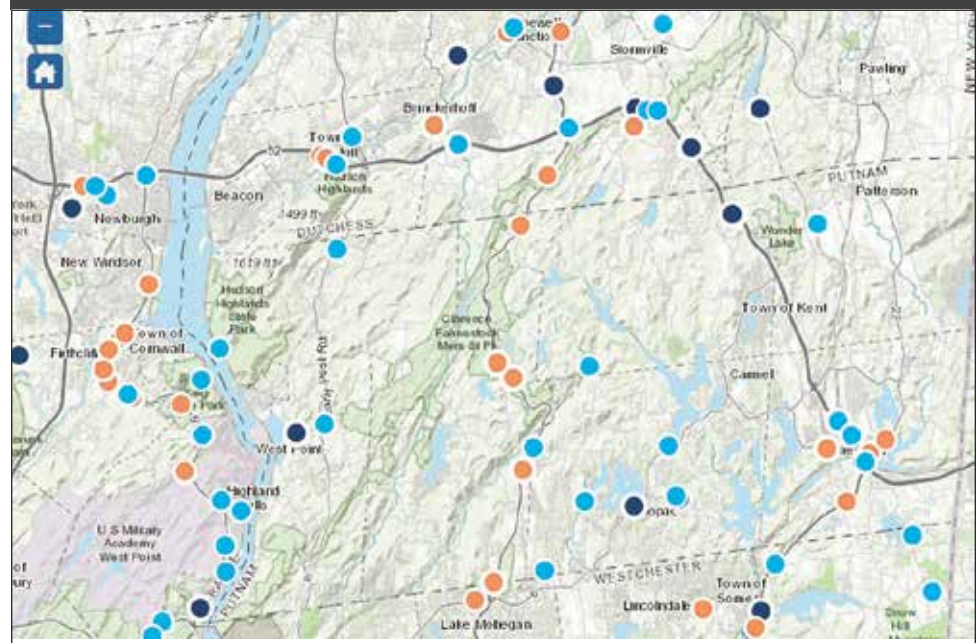
"That interchange is actually something that can be remedied," he said. "We have, what, six lanes of bridges? That interchange had the capacity at a time to make connectivity under 84, to connect the City of Beacon to 9D, underneath and near Dutchess Stadium. Those are all planning steps that the federal government doesn't engage in and the state government doesn't help with. And then local communities are left to try to catch up."

Assembly Member Jonathan Jacobson, a Democrat whose district includes Beacon, said he asked the DOT in 2019 to convert one of the northbound lanes at the interchange to a second lane turning left onto I-84. The agency said it couldn't add a second turn lane without widening it, but instead installed "smart" stop lights that could be adjusted for rush-hour traffic.

Jacobson said the jury is still out on the lights, since commuting plummeted soon after their completion behind the pandemic shutdown. "The technology is in but we don't know how to adjust it to see if it will work because we're not at the old levels of commuters."

Punch List

The state Department of Transportation keeps a running tally of its projects, their costs and deadlines. As of Wednesday (Sept. 15), the list contained 1,696 projects in the planning stages or under construction, including 253 in the Hudson Valley, 60 in Dutchess and 51 in Putnam. Below are examples of construction and maintenance contracts.



A state map shows construction projects in the region.

Signal Improvements

Replace or install traffic control devices at intersections in Dutchess, Ulster and Westchester counties, including replacing signals, installing flashing beacons and adding pedestrian signals and crosswalks on Route 52 at eastbound and westbound exit ramps off I-84 in Fishkill.

2022 | $4.7 million

ADA Sidewalks and Ramps

Build or repair sidewalks and ramps on state highway right of ways in southern Dutchess and Putnam to assure compliance with the Americans with Disabilities Act.

2024 | $2.5 million

Guardrail Replacement

Replace deficient or obsolete rails along state highways in the Hudson Valley.

2023 | $3 million

Bridge Painting

Paint steel surfaces throughout the Hudson Valley to protect against corrosion because of acid rain and de-icing agents.

2021 | $9.3 million

Route 9D Breakneck Tunnel Lighting

Working with Central Hudson, replace the lighting system in the Breakneck Tunnel in the Highlands.

2024 | $2.1 million

Biennial Sign Contract

Replace or upgrade signs in the Hudson Valley that have exceeded their useful life.

2024 | $3 million

Bridge and Culvert Rehab

Correct or prevent problems related to the deterioration of components on four structures, including over Clove Creek on Route 9 in Philipstown.

2021 | $16.3 million

Catch Basins

Repair or replace stormwater catch basins in the Hudson Valley to ensure that the drainage systems function as designed.

2023 | $1.5 million

Emergency Repairs

Take immediate action to repair and prevent degradation of state highways during emergencies.

2022 | $3.7 million

Biennial Mowing

Remove overgrown or undesirable vegetation and litter, including at exits along I-84 in Dutchess, Orange and Putnam counties.

2022 | $542,600

Repave Parts of Taconic State Parkway

Resurface the parkway from the interchange at I-84 in East Fishkill to Route 55 in LaGrange.

2021 | $9.9 million

Crack Sealing

Repair state highways using mastic or crack-sealing treatments to prevent water infiltration and prevent or slow asphalt aggregate binding degradation.

2022 | $1.5 million

Culvert Rehab/Replacement

Repair or replace select culverts on state highways in Orange, Putnam, Ulster and Westchester counties, including along Route 9 in Philipstown. Roadway, sidewalk, wingwall and rail work will also be completed.

2023 | $3.8 million

Resurface Segments of Route 52

Correct pavement deficiencies on Route 52 from Merritt Boulevard to Wiccopee Creek in Fishkill and East Fishkill and from Old State Road to the Putnam County line in East Fishkill. The work will primarily consist of milling the existing pavement and resurfacing the roadway with an asphalt overlay.

2021 | $6.4 million

Rustic Rail Replacement

Replace select segments of the "rustic," self-oxidizing metal guide rails with galvanized steel on state highways in Columbia, Dutchess and Putnam counties. The rustic guide rail is showing signs of extensive deterioration.

2022 | $3.6 million

Signal Optimization

Install wireless sensors that will enable remote signal phase retiming in response to traffic volumes for four systems in Dutchess and Westchester counties, including on Route 9 in Fishkill. The retiming effort will reduce delays and improve air quality by reducing the number of idling vehicles.

2023 | $900,000

Special Surface Treatment

Resurface state highways in the Hudson Valley in high accident locations that are typically related to wet weather or slippery pavement.

2023 | $2 million

Culvert Repair

Repair or replace seven culverts in Orange, Putnam, Rockland and Ulster counties to address problems with corrosion, joint separation, bottom sag, pipe blockage, fill settling, cavitation of fill (sinkhole formation) and sediment buildup. Other maintenance will be considered to prevent inlet and outlet channel problems such as scouring, degradation, accumulation of debris, channel blockage, diversion of flow and bank erosion.

2022 | $1.1 million

Biennial Geotech Subsurface Exploration

Explore subsurface soil conditions to provide data needed in advance of highway, bridge and culvert design in the Hudson Valley.

2022 | $1.3 million

Biennial Long Lines Marking

Apply epoxy and preformed pavement markings on state highways in the Hudson Valley to ensure markings maintain their delineation and reflectivity.

2021 | $7.3 million

Next (Sept. 24): Dams & Waterworks

Reader-Supported News for Philipstown and Beacon

The HIGHLANDS Current

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Haldane Volleyball on a Roll Page 28

Health Workers Due for Shots

Deadline nears for unvaccinated hospital, nursing home staff

By Leonard Sparks and Jeff Simms

Hospital and nursing home personnel in New York state face a deadline next week to get vaccinated or lose their jobs. At the same time, Gov. Kathy Hochul is fighting a court challenge to the state's decision to not allow religious exemptions.

Under an Aug. 16 order, the state's 450,000 hospital employees and 145,000 nursing home workers — including those in Dutchess and Putnam counties — must receive at least their first dose of a COVID-19 vaccine by Monday (Sept. 27). The same order also requires employees at adult-care facilities to receive at least an initial dose by Oct. 7.

Employees with pre-existing conditions can qualify for a medical exemption if a doctor or nurse practitioner certifies that a COVID-19 vaccine could harm their health, but the order does not allow for religious exemptions.

Some hospital systems such as NewYork-Presbyterian (which owns Hudson Valley Hospital in Cortlandt Manor and has medical offices in Cold Spring) and Nuvance Health (which owns the Putnam Hospital Center in Carmel and Vassar Brothers Medical Center in Poughkeepsie) had set their own deadlines.

NewYork-Presbyterian set a Wednesday (Sept. 23) deadline and said in a statement on Thursday that fewer than 250 of its 37,000 employees and 11,000 affiliated doctors had not complied.

As of two weeks ago, the vaccination rate among Putnam Hospital doctors and staff was 74 percent and at Vassar Brothers 70 percent, according to a Nuvance representative. In Newburgh, 82 percent of the staff at Montefiore St. Luke's Cornwall was fully vaccinated as of Tuesday, according to state data.

Nursing homes, where staff members are far less likely to be vaccinated than the patients, show the same kind of variation. At Wingate at Beacon, 83.3 percent of staff had completed their vaccine shots as of Monday, while the Fishkill Center for Reha-

(Continued on Page 6)

CELEBRATION — On Sept. 12, longtime Philipstown residents Sokhara Kim and Chakra Oeur invited fellow refugees and immigrant friends to celebrate one of Cambodia's most important national holidays: Rice Harvest Day, which includes dancing, music and, of course, food. See Page 21. *Photo by Ross Corsair*

Photo by Alexa Strudler

OPERATION Infrastructure

Congress is considering a $1 trillion bill to fix roads, bridges, dams and water systems. What does it mean for the Highlands?

SECOND IN A SERIES

By Chip Rowe

Steve Anderson, who has owned a home in Philipstown for 26 years, has been thinking a great deal about infrastructure over the past decade. He is the founder and managing director of Infrastructure USA, a nonprofit advocacy organization largely funded by groups with skin in the game, such as the American Society of Civil Engineers, the American Council of Engineering Companies and the New York Building Foundation.

A television producer and documentary filmmaker, Anderson created the group in 2009. He said he was searching for a topic related to infrastructure for his next film (e.g., how electrification changed the world) and friends and sources suggested that a website that shared various approaches to the issue might have a wider and more engaged audience. He built it at infrastructureusa.org.

"The responsibility we have to the natural environment is clear, but we also have to take responsibility for our *built* environment," Anderson told me this week. "The backbones of America are creaky. In every community, including in the Hudson

(Continued on Page 8)

Infrastructure *(from page 1)*

Valley, we are deficient in areas that impact people's lives, especially those at the margins, younger people, those seeking a step up. These are investments that play out over generations."


Anderson

Because he is a longtime resident of rural Philipstown, the power grid came up early in our conversation. "After it comes back on, the power company sends you the reason" for the shutdown, he said. "My favorite just said, 'Squirrel.' That was the reason 1,000 customers had no power for a day."

Water was also top of mind. "It's becoming ever more precious, and ever more expensive," he said. "It's an issue that has become more prominent in the last 10 years because of the waste of water, and because the cost of maintaining water systems takes funds away from other expenditures.

"People always say, 'We can't afford it,'" Anderson said of infrastructure spending. "Well, you can pay me now or you can pay me much more later. The roof is leaking. If you consider the multiplier effect of this spending on jobs and the economy, there is an incredible return on investment. But we've become short-term thinkers.

People are willing to pay if they have faith in the process, he noted. "Everyone raises their hand in favor [of infrastructure], but there is an increasing distrust of the shepherds of expenditure. Can we say it's going to go where it was intended?"

Anderson noted that many communities have voted to increase local taxes for infrastructure projects, because that's where the buck stops. "Much of infrastructure is funded by states," he said. "Some of it is funded by the federal government, which can print money. A mayor or legislator cannot do that. When the bridge goes out or the road collapses or the wastewater goes down or the culvert breaks, who has to fix it?"

As we reported last week, a huge influx of money may soon be flowing from D.C. to the states and then to counties and municipalities. Last month, the U.S. Senate, on a 69-30 vote, passed a bill that would dedicate $1 trillion to infrastructure over five years, including $110 billion to fix aging roads and bridges and $55 billion for water infrastructure. The House is expected to vote on the proposal soon.

Anderson envisions those federal dollars funding innovation. "In local communities, these are models that can be replicated. We should be saying, 'Here are the funds. What's the best way to deal with wastewater?' As we look to the next generation and the challenges of climate change, what should we do in our community? There is no shortage of issues, only a shortage of good plans."

He sees the commitment of long-term infrastructure funds as "an opportunity, especially in the Hudson Valley, because we're doing OK," he said. "Let's do everything we can to protect that 'OK' and look like visionaries."

***

Last week, in stories now posted at highlandscurrent.org, we reported on the state of roads and bridges in the Highlands. This week, we look at dams and water systems.

Report Card

Last week we shared letter grades given this year by the American Society of Civil Engineers to the nation's infrastructure, an exercise the group undertakes every four years. In 2015, it also graded New York's. We shared the ASCE's criteria with local elected officials this week and asked them to provide grades, as well.

	NATION	STATE	BEACON	PHILIPSTOWN	COLD SPRING
OVERALL	C -	C -	B+	B -	C
BRIDGES	C	D+	B -	B	*
DAMS	D	C -	C+	*	D
DRINKING WATER	C -	C	B+	B -	B
ROADS	D	D -	B	B -	B -
WASTEWATER	D+	D	A -	C -	B

*Sources: ASCE, Beacon Mayor Lee Kyriacou, Philipstown Supervisor Richard Shea, Cold Spring Mayor Dave Merandy. * Not applicable.*


A 2017 assessment estimated it would cost the Village of Cold Spring about $4 million to repair this reservoir dam. *File photo*

The Dammed Unknown

We know Highlands dams are old. It's what we don't know that's a problem.

By Brian PJ Cronin

The first flood was a warning.

On July 14, 1897, after 22 days of rain, the upper dam on the Melzingah Reservoir failed and water began rushing down Mount Beacon toward a brickyard and boarding houses.

Residents fled, but when the lower dam also burst at 2:30 a.m., the entire reservoir was released. As homes were carried down the mountain, their occupants leaped from the windows. The railroad tracks were destroyed. The official death toll was eight, but accounts noted that a "small settlement of Arabs, 30 or 40 in number, occupying half a dozen huts" had disappeared.

Among the dead was Mary Conroy, wife of John Conroy, the brickyard engineer. The two had met eight years earlier when John saved Mary from the Johnstown Flood of 1889, in which a hastily built earthen dam burst and killed 2,000 people.

In the years after that day, the Melzingah Dam and the Mount Beacon Dam farther up the mountain were each rebuilt and reinforced. But they are still now nearly 100 years old, decades past the average age of an American dam. Maintaining them is a Herculean task. None of the dams in the Highlands is known to be unsafe, but the only surefire method to measure the limits of a dam is when it reaches them.

Every four years, when the American Society of Civil Engineers updates its Infrastructure Report Card, there's pressure to improve the grade given to America's dams, which has been a "D" for the past several years.

Del Shannon, the president of the U.S. Society on Dams and a co-author of the report, said a better grade was being considered, "but then things like Edenville and Oroville happen."

In May, two dams in Edenville, Michigan, failed, leading to the evacuation of 10,000 people. In 2017, a dam in Oroville, California, failed and 200,000 people had to be evacuated. "We keep having failures," said Shannon.

About 15,600 dams in the U.S. are classified as "high hazard," which doesn't refer to their condition but to what would happen downstream if they failed, including loss of life. The Highlands has seven such dams: Mount Beacon and Melzingah and the Glenham hydroelectric, upper and lower Cold Spring dams, Cargill Reservoir and Perkins Estate Pond Dam at Glynwood.

Over the past 20 years, the number of high-hazard dams has doubled, typically because an older dam built in an underpopulated area (usually with less stringent safety features) is now surrounded by development.

"If a dam is in the middle of nowhere, and it fails, and all it does is knock over a couple of trees, no one cares that much," said Shannon. "But if you build your house at the bottom of a dam, that's a much bigger deal."

Adding to the problem is that, unlike with roads, there is no single federal agency that oversees dams. Every state is on its own when it comes to figuring out what makes a dam safe. In New York, the task falls to the Department of Environmental Conservation.

The DEC rates the Mount Beacon and Cargill dams as "deficiently maintained"; the Melzingah and Cold Spring reservoir dams are worse: "unsound." (No dam in the Highlands has the lowest rating: "unsafe.")

Built in 1889 out of "rubble and masonry," according to Ed Balicki, who directs the City of Beacon Water and Sewer Department, the Mount Beacon dam has undergone repeated

(Continued on Page 9)

Dammed *(from page 8)*

repairs to make it stronger. In 1994, the city had vertical metal rods drilled into the structure. During an inspection of Beacon's water system in 2018, Dutchess County found the structure to be "poorly maintained with visible leaks and the concrete surfaces showing widespread decay."

In December, the city received $2.5 million to enlarge the spillway capacity and repair "crumbling" and "spalling" in its body, as well as to add new piping and some fixes to the pocket reservoir. The improved spillway would handle rainfall from a "once-in-a-lifetime" storm, Balicki said at the time.

The work was expected to begin this past summer but the bids collected over the summer were too high because of pandemic supply chain problems. The city will re-bid the project over the winter with a longer time frame to complete the work. The city is working with the DEC to finalize a plan for Melzingah.

In Cold Spring, both reservoir dams have been rated "unsound," and in 2017 an engineer told the Village Board repairing the upper dam would cost between $3.8 million (a single spillway that would require the reservoir to be lowered by 1.2 feet) or $4.2 million (multiple spillways). The village has been negotiating with New York to tap into the Catskill Aqueduct for water if and when fixes are made.

Balicki said that an infusion of federal money from an infrastructure bill being considered in Congress would be helpful for repairs and upkeep and to deal with problems such as at the Pocket Road catchment reservoir at the Mount Beacon dam, which is losing 100,000 gallons of water a day through its rock and concrete face.

Getting money from the state for such projects is difficult, Balicki said, because there's not enough to go around. A $600 million state fund designed to pay for local water projects may sound like a lot, he said, but the average cost to replace a water main is $500,000 per city block. What's more, gathering the information to apply for grants is an investment in time and money that may not pay off.

A view of the dam at the Mount Beacon Reservoir, which holds 124 million gallons of drinking water. *File photo by Mary Fris*

One piece of good news is that 97 percent of New York's high-hazard dams — including all those in the Highlands (below) — have what's known as an Emergency Action Plan on file, one of the highest rates in the country. It tells municipal leaders and first responders the steps that should be taken after a dam failure, including what areas would be affected.

In 2013, for example, when Cold Spring's Emergency Action Plan was being prepared, an engineering firm shared scenarios such as a rain-drenched failure in which a wall of water would reach the Hudson in about an hour, versus a sunny day scenario where it might take 90 minutes just to get to the mouth of Foundry Brook.

Data contained in the plan, including residents' contact information, would be updated annually, the engineer said at the time. More than 100 residences are located within the affected area, although in some sections, such as along Fishkill Road and Foundry Brook below the Route 9D bridge, there are few houses.

The bad news is that the plans are not readily available, which means that residents who would be affected probably have no idea they are in a danger zone.

"Those things aren't the same as a flood map where there's no dam," Shannon said. "A dam is a massive body of water and releasing that in a hurry has a devastating impact. You could live far away from what you think is the flood plain of a dam and actually be in the crosshairs."

It's that lack of knowledge at all levels that Shannon said is his biggest concern, and one that a federal infrastructure bill could greatly alleviate. The state DEC still has only rated about 80 percent of the state's high-hazard dams, and the two most recent high-profile failures in the U.S., at Edenville and Oroville, appeared to have happened for reasons that weren't on anyone's radar. Preliminary reports from Edenville suggest that the culprit was previously undocumented seepage; in Oroville, no one realized the anchors holding the concrete spillway weren't deep enough.

"That should scare the bejesus out of just about everybody," Shannon said. "How many other dams out there are like that? I don't know. We don't have the resources to do a big evaluation of every single dam."

> "A dam is a massive body of water and releasing that in a hurry has a devastating impact. You could live far away from what you think is the flood plain of a dam and actually be in the crosshairs.
>
> ~ Del Shannon, U.S. Society on Dams

Coming Soon to the Ballot

The November 2022 ballot will include a proposal to allow the state to issue $3 billion in bonds to fund investments in water, air, wildlife and the environment.

If approved, the Restore Mother Nature Bond Act would provide:

- At least $1 billion for flood-risk reduction such as wetland, floodplain and stream restoration; and dam removal and culvert repairs.
- At least $550 million for wastewater infrastructure projects; municipal stormwater projects; municipal grants for stormwater with green infrastructure; sewer line replacements for failing septic systems or cesspools; and lead service line replacements.
- As much as $700 million for climate-change mitigation projects, such as green buildings and green roofs, and to reduce water pollution.

High-Hazard Dam Report

DAM	RIVER/STREAM	LOCATION	COMPLETED	PURPOSE	LENGTH (FT.)	HEIGHT (FT.)	LAST INSPECTED	CAPACITY (ACRES)	CONDITION
MOUNT BEACON	Dry Brook	Fishkill	1922	Water supply	350	35	2018	606	Deficient
GLENHAM	Fishkill Creek	Beacon	1875	Hydroelectric	312	45	2001	43	Not rated
MELZINGAH	Gordon's Brook	Fishkill	1924	Water supply	525	51	2019	218	Unsound
CARGILL RESERVOIR	Cargill Brook	Philipstown	1931	Water supply	650	75	2018	648	Deficient
PERKINS ESTATE	Clove Creek	Philipstown	1927	Recreation	350	25	2019	540	Unsound
COLD SPRING UPPER	Foundry Brook	Philipstown	1934	Water supply	270	23	2018	88	Unsound
COLD SPRING LOWER	Foundry Brook	Philipstown	1942	Water supply	328	25	2018	70	Unsound

Source: New York State DEC

Infrastructure Redux

Tioronda Bridge, Beacon

Built around 1870, the 16-foot-wide bridge, also known as the South Avenue Bridge, crosses Fishkill Creek and linked mills and factories with rail lines. After falling into disrepair, it closed to traffic in 1985 and was disassembled in 2006. Today all that remains are two split-stone abutments and two piers.

Before being taken down, the bridge was a rare example of an iron bowstring arch-truss bridge built in the years after the Civil War. A bridge in Allegheny County, Pennsylvania, is the only other known example.

In 2017, the state Department of Transportation contributed $500,000 to restore the bridge with a walkway and one lane of low-speed vehicle traffic, a project that is expected to cost closer to $1 million.

Rail Trail, Beacon

A paved trail runs parallel to more than half of the Metropolitan Transportation Authority's Beacon railroad line — the Maybrook section from Brewster to Hopewell Junction, which has been closed since the mid-1990s — and has been incorporated into the Empire State Trail, which stretches from lower Manhattan to Canada, or, if you head west, to Buffalo.

Metro-North in February announced its intention to discontinue use of a 41-mile segment of the line, which could open the door to bringing the trail to Beacon to join walking paths in the city. However, the Housatonic Railroad Co., which has the right to use the tracks is opposing the MTA plan.

Walkway Over the Hudson, Poughkeepsie

The Poughkeepsie Railroad Bridge was completed in 1888 to allow trains to bring coal from western Pennsylvania to New England. In 1974, a fire among the timbers damaged the steel, and a bankrupt Penn Central could not afford repairs. By 1980, Penn Central had been taken over by Conrail.

Facing $20 million in estimated repairs, Conrail investigated whether it could blow the bridge up, or tear it down, but faced opposition in part because of the fear that demolition would stir up industrial pollution in the riverbed. In 1984, Conrail sold the bridge to an investor, who in 1990 sold it for $1 to another investor, who in 1998 gave it to Walkway Over the Hudson. The nonprofit transformed the bridge into a "linear park" that opened in 2008.

> "Our cities were built in response to yesterday's problems."
>
> **~ From a report by Rebuild by Design, a New York City-based nonprofit**

David Tavernier, chief operator of Beacon's wastewater treatment facility; Council Member Dan Aymar-Blair; state Assembly Member Jonathan Jacobson; and City Adminstrator Chris White in August, after the governor enacted a bill to allow Beacon to sell its excess sewer capacity outside of city limits. *Photo provided*

Taps, Toilets and Tech

Managing systems of 'the unknown and the unseen'

By Michael Turton

Infrastructure, like a human being, has a life expectancy. But unlike a human being, it's used at the same speed and consistency every day, even as it ages.

Ed Balicki, who directs the City of Beacon's Water and Sewer Department, says that while a water system is "designed to last a lifetime and more, as it starts to fail, the question becomes, 'Why wasn't it maintained?'"

In Cold Spring, drinking water is delivered through a system built in 1895 from two reservoirs located above the village off Lake Surprise Road. Surface water flows to a smaller reservoir and treatment plant on Fishkill Road before entering pipes that also serve Nelsonville and about a dozen homes in Philipstown, where the vast majority of homeowners have wells.

"The water treatment plant is in fairly good shape," Matt Kroog, Cold Spring's superintendent of water and wastewater, said this week, although three filtration units "are showing their age" and will need to be replaced at a cost of $330,000 each or refurbished for $83,000 each.

In Beacon, the system delivers 2.3 million gallons a day from three reservoirs: Mount Beacon, Cargill and Melzingah, which collectively hold 341 million gallons. The city also draws water from two wells on Fishkill Creek and a well field on Clove Creek.

The reservoirs were created from the late 19th century through the 1930s. While the dams need attention, Balicki said a bigger challenge has been the "ever-changing regulatory landscape" because of the effects of climate change. As storms become larger and more frequent, the dams must meet more stringent standards to stand up to them.

Water quality regulations can also be tricky, he said. One of the latest regulations requires cities to test for perfluorooctanoic acid (PFOA), a fluorinated hydrocarbon found in firefighting foam. "They're now also finding it in places that never used the foam or had industry," Balicki said. "That regulation came out of nowhere."

Asked how he would spend the funds if his budget increased overnight, Balicki didn't hesitate. "Staffing," he said. "We'd all say we're stretched thin. There are days when we're focused on sewer needs, cleaning pipes and making great progress," he said. But then the crew has to pivot and clear brush at a reservoir.

"It'd be great to have enough staff to keep focused on one task," he said.

Kroog said the same thing. "We're a staff of three; there are 3,000 customers, 900-plus connections and about 9½ miles of pipe," not including sewers.

(Continued on Page 11)

Crystal Ball

> The more likely threat to the Hudson Valley from the continued failure to more heavily invest in our infrastructure would be the advent of another superstorm like Lee, Sandy or Irene, where we witnessed the impact of chronically neglected infrastructure."
>
> *~ From a 2017 report by Hudson Valley Pattern for Progress*

Water (from page 10)

Even if Kroog's budget permitted more hires, it's difficult to find qualified applicants. "It's not an industry many people seek to get into," he said, adding that his two colleagues are working toward becoming fully licensed system operators.

Despite any shortcomings, Balicki said he is satisfied with the quality of Beacon's system. "It's complex, with multiple reservoirs and wells," he said. "That blend provides us with a better water supply, but it also creates hurdles."

The city has been investing in its sewer system at the same time. For example, "last year we upgraded the north interceptor sewer, part of the west side of the city drainage area," he said, while conceding "we have older sewer infrastructure that can still be a potential hazard. We had a 30-foot-deep manhole collapse on Main Street."

The city also built a structure over where the sewer enters the treatment plant. The old works were located outside. "You can imagine in subzero winter temperatures how much fun that was," he said.

There have been problems with Beacon sewers during major storms, when the plant discharged too much overflow into the Hudson and there were overflows and backups. Even though storm sewers had been isolated, there were still old connections, he said, and homes with sump pumps and broken pipes. In one case, city workers found two 10-inch sewer pipes connected to an 8-inch pipe. "There were bottlenecks that had to be corrected," he said.

The system is not wanting for capacity. In fact, Beacon takes in wastewater from the Town and Village of Fishkill and earlier this year, then-Gov. Andrew Cuomo enacted a law that allows the city to sell its excess capacity to private firms outside city limits. Beacon gets some of its drinking water from Fishkill sources.

"The sewage plant is designed to take in 6 million gallons a day; we're averaging 3.5 million gallons," Balicki said.

What's especially difficult to manage is "the unknown and the unseen," he said: Buried pipes. There are at least 50 miles of them in the city, and a catastrophe could be a single failure away. "A pipe breaks, a sewer collapses and two basements end up flooding," he said. Balicki said he'd also love to replace the cast-iron water mains. "We did a repair and the pipe was stamped 1930," he said. "A pipe can last 100 years, but eventually it's going to have continuous issues."

Balicki said he would like to see Beacon adopt "smart meters" that make it easier to detect leaks. Given a larger budget, Balicki said he also would improve the de-watering equipment at the sewage treatment plant. Currently, sludge is squeezed between two belts to remove the water.

"It's one of the best systems in old-school de-watering," he said, but centrifuge technology is available that spins the sludge to remove the water. "That's one thing we're looking at."

Village of Cold Spring workers battled frigid temperatures while repairing a broken water main in January 2018.

File photo by Sal Pidala Jr.

Kroog said the Cold Spring system functions well, but he would love to have granular-activated carbon filters, a "polishing" system that removes byproducts of the chemical disinfection of water. They can also help eliminate "rotten egg" smells and chlorine taste from treated water. There's also microfiltration, which separates microorganisms and suspended particles from wastewater.

The big decision for the village, Kroog said, is what to do about its reservoirs, where the dams need major repairs (see Page 8). Last year, in a study commissioned by the Hudson Highlands Land Trust, Chazen Engineering recommended the village establish a well field along the Clove Creek aquifer, which would eliminate the need for reservoirs, or to refurbish them.

Switching to wells could also end Cold Spring's need to tap into the Catskill Aqueduct, which crosses the eastern edge of Nelsonville. For the past 15 years, the village has been negotiating an agreement with its owner, the New York City Department of Environmental Protection, to use it as an emergency water source, especially during dam repairs.

Leaks have been a problem at times in the 125-year-old water system, but Kroog has largely dodged that bullet. "In the two years I've been here, there's been a leak maybe once every six months," he said. "And that has been on service lines [that extend into homes], not the mains."

At present, Cold Spring has more than enough water, he said, averaging 220,000 to 250,000 gallons in daily usage. In addition to the reservoirs, the system includes two 285,000-gallon storage tanks. He said that, compared to other systems he's seen over the past quarter century, Cold Spring's rates in the top 15 percent.

The sewage treatment plant is newer, going online in 1972, but also doing well for a 50-year-old plant, he said, because of continuing maintenance. The plant is designed to treat up to 500,000 gallons of wastewater a day and the village produces between 180,000 and 220,000 gallons, he said. (It doesn't handle stormwater.)

Kroog said there haven't been any major blockages or sewer leaks in the two years since he succeeded Greg Phillips, who retired after 22 years. "It's basically a preventive plan, getting inspections done, and trying to keep up with the system."

Weather Damage

$37,300,000,000

State and federal assistance provided to New York counties between 2011 and 2019

60

Percentage of New York counties that had at least five disaster declarations between 2011 and 2019. Dutchess and Putnam each had seven.

23

Daily probability of a flooding episode in the state, according to a hazard mitigation plan by the Division of Homeland Security & Emergency Services

90 Percent of smaller companies that fail within a year following a disaster unless they can reopen with five days, according to FEMA

Source: Resilient Infrastructure for New York State, Rebuild by Design, 2019. The nonprofit has proposed a Resilient Infrastructure Fund to build projects that protect communities from flooding. It would be funded by a surcharge on property-casualty insurance and a bond measure approved by voters.