Lambertville Stormwater Management

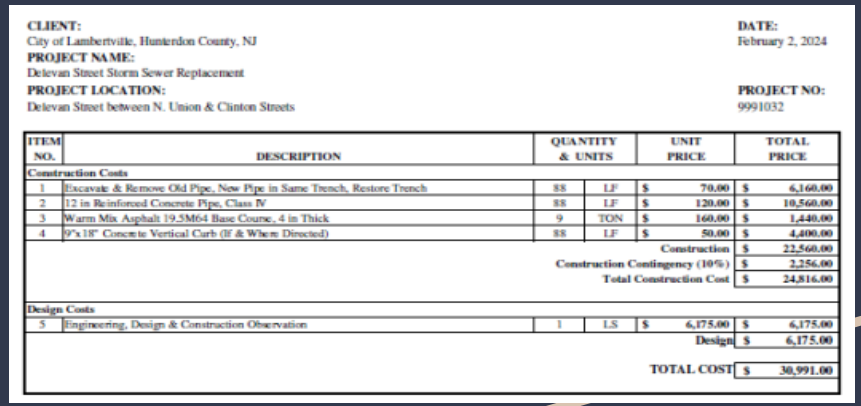
Arnett Ave. Culvert

- Photo was take following the collapse of the culvert as a result of Hurricane Ida
- Culvert is approximately 170 feet long, 4½ ft high by 6 ft wide and passes underneath the backyards of six houses.
- NJDOT has some jurisdiction; the City has the majority
- Compacted silt, dirt and debris present along the entire length, accounting for roughly 50% loss of capacity.
- During Hurricane Ida, the culvert collapsed and destroyed two backyards
- Because of compaction and confined space, debris had to be removed by hand with a small shovel
- Total cost of repair to culvert: $368,890
- Project completed 16 months after collapse

Questions:

- When was this culvert last cleaned? **Unknown**
- Are there construction plans with hydrologic capacity? **No**
- Had the culvert been clean, would it have collapsed? **Unknown**
- Is there a maintenance program to clean culverts? **No**
- Can we identify hydrologic capacity of this culvert? **Yes**
- Is the City required to maintain the culvert under its MS4TierA permit requirements? **Yes**
- Do cross jurisdictional responsibilities complicate maintenance and capital improvements to the culvert? **Yes**

Delevan Street Storm Sewer Pipe



CLIENT:
City of Lambertville, Hunterdon County, NJ
PROJECT NAME:
Delevan Street Storm Sewer Replacement
PROJECT LOCATION:
Delevan Street between N. Union & Clinton Streets

DATE:
February 2, 2024

PROJECT NO:
9991032

ITEM NO.	DESCRIPTION	QUANTITY & UNITS		UNIT PRICE	TOTAL PRICE
Construction Costs					
1	Excavate & Remove Old Pipe, New Pipe in Same Trench, Restore Trench	88	LF	$ 70.00	$ 6,160.00
2	12 in Reinforced Concrete Pipe, Class IV	88	LF	$ 120.00	$ 10,560.00
3	Warm Mix Asphalt 19.5M64 Base Course, 4 in Thick	9	TON	$ 160.00	$ 1,440.00
4	9"x18" Concrete Vertical Curb (If & Where Directed)	88	LF	$ 50.00	$ 4,400.00
				Construction	$ 22,560.00
				Construction Contingency (10%)	$ 2,256.00
				Total Construction Cost	$ 24,816.00
Design Costs					
5	Engineering, Design & Construction Observation	1	LS	$ 6,175.00	$ 6,175.00
				Design	$ 6,175.00
				TOTAL COST	$ 30,991.00

- During construction of a residential site this past summer, a contractor nicked a storm sewer pipe.
- The City videoed the pipe at a cost of $2,200 to review contractor damage.
- Video revealed not only contractor damage, but damage in three other place, as well as the disintegration of the last few feet of pipe leaving stormwater to drain directly into the ground
- Cost to replace 88 linear feet: $30,991

Questions

- How long has this been damaged? **Unknown**
- Does the City routinely inspect/video underground pipes? **No**
- Does the City have the resources to undertake a system wide assessment? **No**

City of Lambertville

- 1.2 square miles, population: 4,139
- 17 miles of roadways, 13 under City jurisdiction
- Delaware River along western boundry
- Steep slopes along eastern boundry
- Three creeks run through city

- Seven major riverine floods since 1841
- Two major flash floods–Irene 2011 & Ida 2021
- 86 NFIP designated Repetitive or Severe Repetitive Loss properties.

Hurricane Ida

During four hours on the evening of September 1, 2021, Lambertville received upwards of ten inches of rain. As a result:

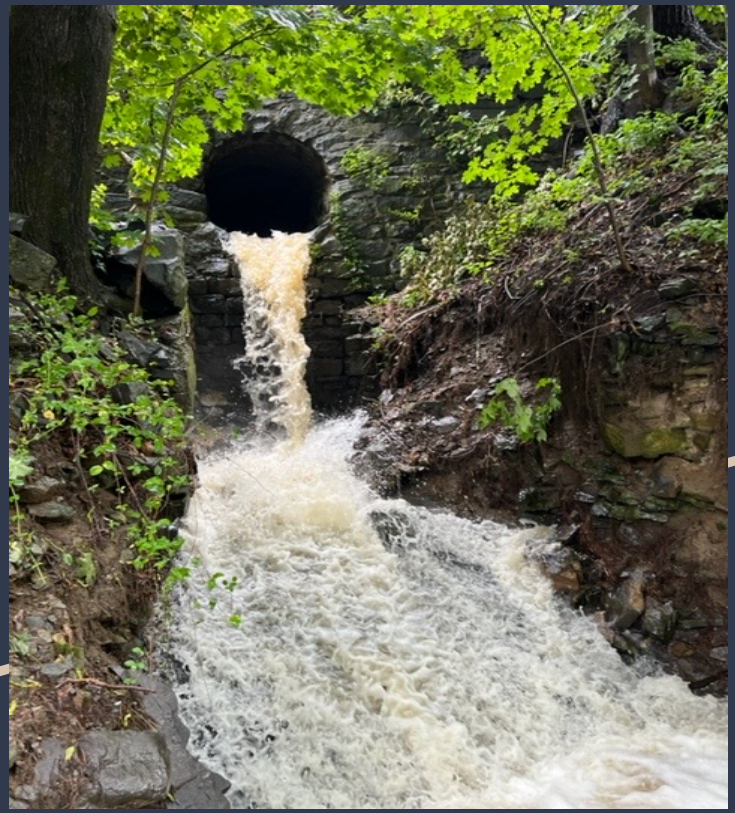
- The fire department responded to 158 calls for emergency services and rescues
- 44-unit Village apartment complex was evacuated by boat and later condemned.
- More than 130 properties not in a designated flood zone suffered damage ranging from moderate to catastrophic, including two houses that were completely destroyed
- Over 400 individual property damage reports were filed with the City in the week after Ida
- Three dozen vehicles were destroyed
- Scores of families left Lambertville

Hurricane Ida

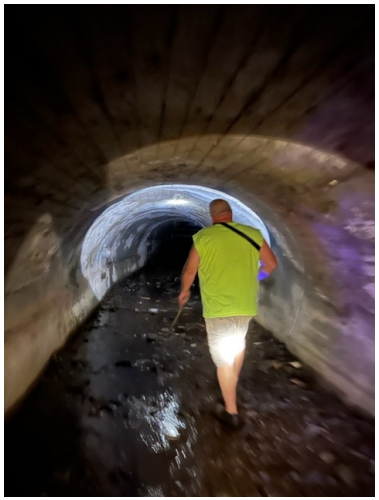
Hurricane Ida

- $6,856,905 paid in NFIP claims at 102 properties
- $2,074,664 in direct grant payments to 272 applicants
- $2,978,612 in infrastructure repair grants including roads, creeks, culverts, and storm drains, completed by December, 2022 (FEMA and USDA/NRCS)
- On April 1, 2022, 80 volunteers removed an estimated 6,000 pounds of debris from the creeks
- Two homes acquired through the Blue Acres program. Two more are pending
- Establishment of Lambertville Resilience Team

Stormwater Infrastructure



- Wide Range of 19th and 20th Century Systems
- Three creeks: Alexauken, Swan, and Ely
- More than 575 stormwater inlets
- More than two dozen outfalls
- Half a dozen detention basins
- Three major culverts and a dozen or more smaller culverts
- Miles of underground pipes of clay, metal, or concrete
- Swales, gullies, ditches
- Cross Jurisdictional Systems (DOT, County, Municipal)



Delaware Ave Culvert
(seven feet high)

Stormwater Management Challenges

- Topography: steep, wooded slopes, Delaware river flood plain, three creeks
- Debris, especially from dead ash trees
- Stormwater from multiple watersheds passes through Lambertville.
- High percentage of impervious surface
- Heavier precipitation in shorter periods, creating greater strain on systems
- Aging systems and insufficient capacities
- Day to day maintenance: DPW staffing – seven full time employees whose primary focus is trash/recycling collection
- Funding – both for regular maintenance and capital projects
- New MS4 Tier A regulations
- Development pressures
- No Regional Stormwater Management
- Cross jurisdictional systems
- Largely reactive
- Surprises

Lambertville

Flooding on July 15, 2023

- On July 15, 2023 the City suffered two unforecasted back-to-back storms that resulted in flash flooding
- Significant drainage issues due to debris blocked inlets and insufficient, outdated infrastructure
- Took several days for the DPW to clear all blocked inlets and culverts
- Two large trees fell during the storm, one on a house, the second on a main power line near the Central Business District
- These rainfall events are occurring with greater frequency and unpredictability
- Warren County was declared a Federal Disaster Area by President Biden – met the threshold of $16.5 million in damages

Bridge Street

Swan Creek

Church Street

A Network of Solutions

- Established the Lambertville Resilience Team
- Education – newsletter, videos, website
- Grants: FEMA, USDA, NFWF grant, DEP grants (Resilience Planner and Stormwater Utility Feasibility Study), NJLCV Stormwater Utility Feasibility Study, North Jersey Vibrant Places and Rutgers Transportation Center grant for *Flowing Together,* $450,000 federal earmark for green infrastructure and stormwater management on Music Mountain, Tree inventory grant, Sustainable Jersey, PSE&G grant for trees
- Green Infrastructure
- Amended Flood Damage Prevention Ordinance and Stormwater Management Ordinance
- Compliant with new MS4 Tier A regulations
- Completed mapping of all stormwater inlets, outfalls, and detention basins
- Completed Stormwater Pollution Prevention Plan
- Stormwater Utility

Stormwater Utility

- N.J. Clean Stormwater and Flood Reduction Act, signed into law in 2019
- Authorizes local and county governments the ability to create stormwater utilities that provide a dedicated funding source for stormwater management and capital improvements to stormwater infrastructure
- A Utility establishes reasonable and equitable fees based on proportionate contribution of stormwater and allows for partial credits based on Stormwater reduction. The only exemption is for properties that fall under the Farmland Assessment Act of 1964
- With assistance from NJ Future, Lambertville received a grant from the NJLCV to conduct a feasibility study
- Have a signed contract to conduct the study with Princeton Hydro who has partnered with WSP, an international firm with decades of experience in Stormwater management
- Once the study is complete, the goal is to put this to a referendum in fall 2024