

Stormwater Fund for the City of Newark

Introduction:

Due to the severe flooding events this past summer, the Public Works and Water Resources Department performed an investigation of the areas which experienced the worst of the flooding and found a variety of problems with the city's stormwater. Some of the areas which saw the worst flooding were East Main Street, Paper Mill Road, Timberline Drive, Barksdale Estates, Casho Mill Road, Devon and Devon Binns, Kells Avenue and Arbour Drive.

Investigation:

The City contracted local engineering firm Pennoni Associates to investigate the storm sewer system in the above described locations. They performed a visual inspection of the system in each location and found a series of problems that contributed to flooding. The full list of problems can be found on the following pages.

Action Items:

In order to mitigate the issues of flooding in these areas, the city has designed a series of immediate, and short and long term action items. Immediate action items include proactive actions the city is already taking to help deal with problems to the system such as active maintenance, debris removal where accessible and grate cleaning throughout the system. Short term action items include projects that lack the current funding to complete, but would be started soon after the development of the stormwater fund. Long term action items are projects that will require significant engineering analysis, carry a significant cost, and are anticipated to take a longer time to complete.

Funding Options:

The city has developed a variety of funding options in order to make the necessary repairs and help mitigate future heavy rainfall events. The city will require an additional estimated \$1.5 million every year for the next five years in order to make the necessary repairs to the system. One funding option is a flat tax. Having viewed the other options, this was decided to not be a preferred choice because around 46% of the property in Newark is tax exempt, meaning that taxes would be higher for the average resident, even after factoring in Federal deductions on local taxes. Another option is a water rate increase. For most residential customers – customers that use more than 130 gallons per day – the water rate increase alternative will result in monthly charges in excess of \$7.50 per month. As determined by city staff, the preferred option is a \$7.50 flat fee for residential units and \$30 for commercial units. There are several benefits of this form of implementation such as simplicity, fairness, ease of implementation, and cost effectiveness. In addition, for an overwhelming majority of customers, the other funding options would be more expensive than the \$7.50 flat fee for residential.

Full List of Identified Problem Areas and Potential Costs

- **East Main Street and Haines Street**

- **Issues in East Main Street and Haines Street**

- Larger inflow pipe into a smaller outflow pipe
- Utility Pipes crossing through storm sewer
- Protruding Pipe Connections

- **Potential Costs of Projects**

- Drainage Area Analysis at East Main Street at Inlet 366 with an estimated cost of **\$9,000.**
- East Main St. Storm Sewer Improvements Including Engineering Services with an estimated cost of **\$87,900.**
- East Main St./Haines St. Survey, Modeling Engineering Costs with an estimated cost of **\$24,500.**
- Haines St. Storm Sewer Improvements Including Engineering Services with an estimated cost of **\$3,720,000**

- **Kells Avenue**

- **Issues in Kells Avenue**

- System is over **70 years old**
- Sanitary sewer crossing storm channel
- Overgrown Vegetation
- Utility Pipe Crossings

- **Potential Costs of Projects**

- Kells Avenue Survey, Modeling Engineering Costs with an estimated cost of **\$23,000**
- Kells Avenue Storm Sewer Improvements Including Engineering Services with an estimated cost of **\$764,000**

- **Arbour Drive**

- **Issues in Arbour Drive**

- The current system is over **40 years old**
- Low point not at inlet structure along curb
- No inlets on downslope of Arbour Drive to capture gutter flow
- Acute flow angle and directly opposing flow at manhole 215
- Some inlets and manholes in need of repair

- **Potential Costs of Projects**

- Arbour Drive Storm Sewer Improvements Including Engineering Services with an estimated cost of **\$111,000**

- **Swarthmore Road and Devon Place**

- **Issues at Swarthmore Road and Devon Place**

- The current system is over **60 years old**
- Limited storm sewer systems in place (Lehigh Rd., Kenyon Ln., Chrysler Ave., Swarthmore Rd., Susquehanna Cir., Alexandria Dr., Devon Dr., Cornwall Dr., and Shull Dr.)
- Grading, above ground structures and vegetation inhibiting effectiveness of inlets in the easement areas.
- No storm water routes for runoff associated with larger storms.
- Obstruction in front of headwall 279 on Amtrak property
- Had to remove debris from grate of inlet 228 and 229 in private yard to gain access to pipe.
- Vegetation and Obstructions

- **Potential Costs of Projects**

- Devon Place Survey, Modeling Engineering Costs with an estimated cost of **\$24,300**
- Devon Place Storm Sewer Improvements Including Engineering Services with an estimated cost of **\$1,313,000**

- **Barksdale Road and Julie Lane**

- **Issues at Barksdale Road and Julie Lane**

- The current system is from the 1980's
- Deteriorated walls leading to the build-up of debris
- Overgrown vegetation leading to blockage of drainage system
- Protruding Pipe

- **Potential Costs of Projects**

- Julie Lane Culvert with an estimated cost of **\$100,000**

- **Paper Mill Road**

- **Issues at Paper Mill Road**

- Jenny's Run overflows onto Paper Mill Road around Curtis Lane due to restriction at culvert under entrance to park
- Culvert under entrance to park partially filled with sediment
- Culvert opening repeatedly blocked with debris
- Pipe condition deteriorating

- **Potential Costs of Projects**

- Paper Mill Road Culvert Replacement Including Engineering Services with an estimated cost of **\$280,000**.

- **Timberline Culvert**

- **Issues at Timberline Culvert**

- Insufficient culvert capacity causes stream to overtop Timberline Drive
- No wing walls on upstream end of culvert

- **Potential Costs of Projects**

- Timberline Culvert Replacement Including Engineering Services with an estimated cost of **\$530,000.**



Figure 1 Shown here is Swarthmore Road and Devon Place severely affected by the flooding of the August 13, 2013 storm. The flooding was extensive enough to reach the bed of the pick-up truck in the background.