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HOUSE DEMOCRATIC POLICY COMMITTEE

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 @PADemPolicy

House of Representatives
COMMONWEALTH OF PENNSYLVANIA

HOUSE DEMOCRATIC POLICY COMMITTEE HEARING
Topic: Stormwater Management and Infrastructure
East Bradford Township Building – West Chester, PA
October 15, 2019

AGENDA

- 2:00 p.m. Welcome and Opening Remarks
- 2:10 p.m. Panel One:
- Mark J. Lucas
Township Engineer, East Bradford Township
 - Mike Callahan, CPSS
Stormwater Program Manager, Derry Township Municipal Authority
- 2:30 p.m. *Questions & Answers*
- 2:50 p.m. Panel Two:
- Christian Stromaier
Managing Director, Chester County Conservation District
 - Dr. Melinda Daniels
Associate Research Scientist, Stroud Water Research Center
 - Adam Supplee
Landscape Architect/Planner, Traffic Planning and Design, Inc.
- 3:20 p.m. *Questions & Answers*
- 3:40 p.m. Closing Remarks

Maximizing Impacts of Legislation on the Ground

Chris Stohmaier, Managing Director
Chester County Conservation District

HB 1565 was first presented in June 2013 by Rep. Hahn (R-Northampton) and eventually approved by the Governor in October 2014 to become Act 162. It amends Section 402 of the act of June 22, 1937, known as the Clean Streams Law to add provisions that affect NPDES permits for Discharges Associated with Construction Activities. Environmental groups were not in favor of this bill as it was anticipated that it would weaken DEP requirements (as presented in 25 PA Code Chapter 102) for stream buffers in Special Protection (HQ/EV) Watersheds. It should be noted; however, that under 25 PA Code Section 102.14(d)(2), applicants could previously request waivers to the buffer requirements and many were granted throughout the state (including Chester County). From a Pennsylvania Environmental Council (PEC) Letter to PA Senate in Opposition to HB1565 dated 9/30/14, "In her January 29, 2014 testimony before the House Environmental Resources & Energy Committee, Deputy Secretary for Water Management Kelly Heffner could not recall a single instance where such a waiver was denied."

In summary, Act 162 provides that:

- Riparian buffers are a non-mandatory option for persons whose earth disturbance activities trigger the requirement for an NPDES permit under PA Code Chapter 102; applicants still have the option to use riparian buffers or riparian forest buffers as described in PA Code Chapter 102.14; however, an applicant may utilize alternative best management practices (BMPs) that are as equivalent in effectiveness to riparian buffers.
- Act 162 also mandates replacement buffer offsets for all projects that do not choose a riparian buffer BMP approach for projects that would have under PA Code Chapter 102.14 been required to utilize a riparian buffer or riparian forest buffer where an applicable earth disturbance activity is located within 100 feet of a surface water.

Over the next few months, PA DEP worked to create policies and guidance on their interpretation of Act 162 (some of which are listed below) which were published in the winter and spring of 2014/2015 to the regional DEP offices, County Conservation Districts, and general public. One interpretation has, in practice, actually made the riparian buffer requirements more stringent. On PA DEP's Frequently Asked Questions for Act 162 of 2014 Implementation documented dated 12/18/14, FAQ #8 states that Act 162 does not include waivers as an option therefore applicants can no longer seek waivers under 25 PA Code Section 102.14(d)(2). With the removal of waiver as an option to applicant, the 100' and 150' buffer from perennial or intermittent river, stream, or creek, or lake, pond or reservoir has had less earth disturbance and been more protected on NPDES permitted sites since Act 162.

Published Documents:

- Implementation Plan for Act 162 of 2014 (PA DEP Document Number 310-2135-001 dated 12/20/14)
- FAQs for Act 162 of 2014 Implementation (last modified 12/18/14)
- Riparian Forest or Riparian Forest Buffer Equivalency Demonstration (PA Document Number 310-2135-002 dated 3/21/15)
- Riparian Forest or Riparian Forest Buffer Offsetting (PA Document Number 310-2135-003 dated 3/21/15)

References:

1. PA Environmental Digest Article 10/27/14 "Gov. Corbett Signs Bill Weakening Stream Buffer Requirements Into Law" - <http://www.paenvironmentdigest.com/newsletter/default.asp?NewsletterArticleID=30280>
2. HB 1565 Timeline - https://www.legis.state.pa.us/CFDOCS/billInfo/bill_history.cfm?syear=2013&sind=0&body=H&type=B&bn=1565
3. PEC Letter - <https://pecpa.org/policy/pec-letter-to-pa-senate-in-opposition-to-hb1565/>
4. PA DEP Construction Stormwater Act 162 Resources - <https://www.dep.pa.gov/Business/Water/CleanWater/StormwaterMgmt/Stormwater%20Construction/Pages/Act162.aspx>

Derry Township Municipal Authority Stormwater Authority

Mike Callahan, CPSS
Stormwater Program Manager
Derry Township Municipal Authority



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Derry Township Municipal Authority

- Formed in 1972
 - 7 member Board
 - 2 Township Board of Supervisor Members since the late 1990's
 - Added Stormwater in 2016/2017
- Very good working relationship with the Township
- Derry Township is a Second Class Township in Dauphin County with approximately 25,000 residents located in 27 square miles



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Why Authorities Are Asked to Handle Stormwater



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Why Authorities Are Asked to Handle Stormwater



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Aging Infrastructure



Derry Township Municipal Authority

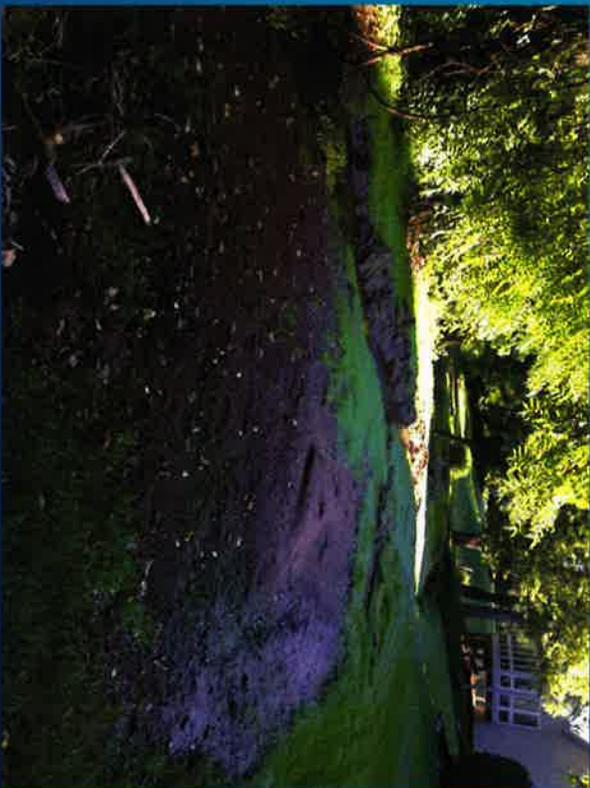
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Watershed-scale Issues



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Big Storms



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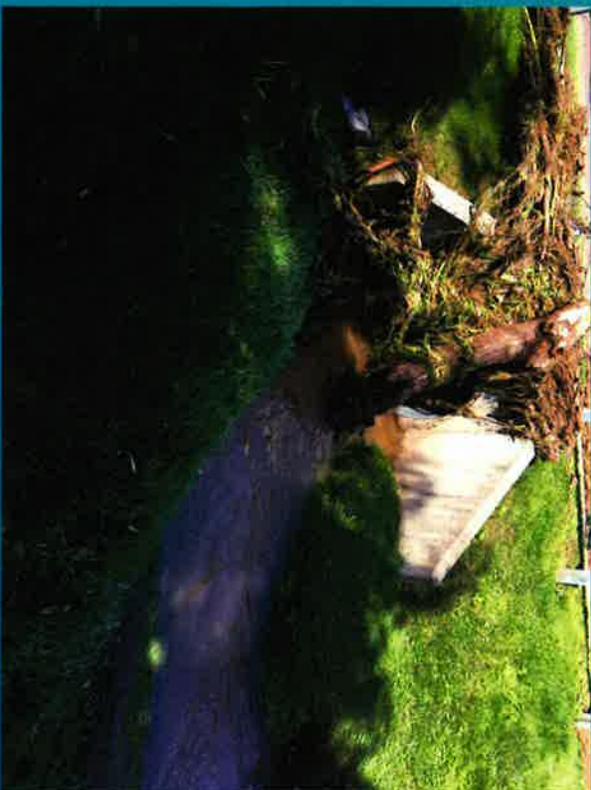
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Cloud Bursts



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Continual Maintenance



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Emergency Repairs



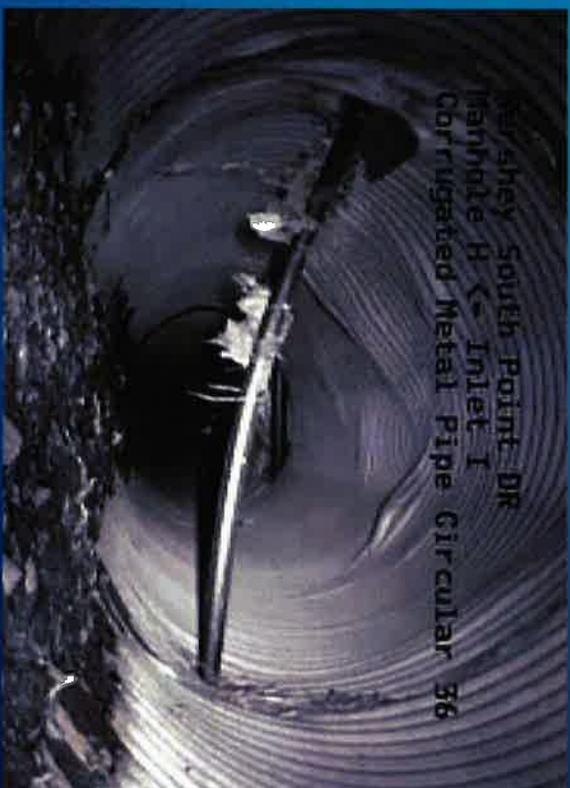
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The Second Thought Infrastructure



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The Big Picture



Why is Dedicated Funding Needed?

- Meet increasing regulatory requirements
- Effectively handle and manage stormwater runoff
- Assess stormwater and flooding problems
- Cost effectively maintain aging stormwater infrastructure
- Prioritize and strategically implement capital improvements
- Overcome restrictions of level funding



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Why Implement a Stormwater Program Fee?

- Provides a dedicated source of funds
- Funds directed solely to stormwater management
- Fairly apportion costs to the burden each property contributes to the system
 - Based upon impervious area = “contribution to the problem”
Users pay based upon level of service received
- Fees can be collected from tax exempt users
- Credits provided based on level of service received
- Provides an incentive to reduce impervious surface



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Infrastructure Review / Identified Needs

- \$27,000,000 in needed improvements identified through planning documents
- Condition Assessment and priority planning ~ \$0.5M
 - Partnership with US Army Corps of Engineers (50/50 cost share)
 - Mapping/Condition Assessment of Infrastructure (years 2016-2018)
 - Impervious Surface Development in GIS
 - Flood Modeling
 - Flood Emergency Access Study
- Replacement of failed infrastructure ~ \$11M
 - Significant portion of pipe and facilities anticipated to reach its useful life over next 10-20 years
- System improvements and new green infrastructure / stormwater best management practices (BMPs) to address flooding ~ \$15.5M



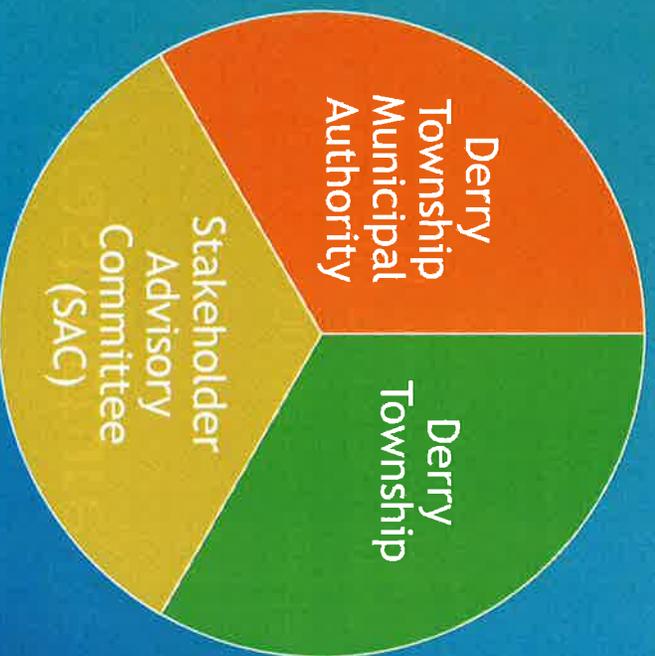
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Derry Township Stormwater Partnerships



- Township Board of Supervisors recognized the need to develop a new model comprehensive Stormwater Management Program (SMP) for the Township
- Meeting held between Board of Supervisors, DTMA, and both staffs for 3-4 months to discuss pros, cons, and potential hurdles
- No downside for DTMA
- All upside for the Township residents
- Formed Stakeholder Advisory Committee (SAC) to evaluate program further



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Program Level of Service

Level	Level of Service	Operations & Maintenance	Planning & Compliance	Capital Improvements
Desired Level	Comprehensive	Fully Preventative/ 100% Routine	Comp planning, NPDES compliance	Prioritized/Fully Funded
Existing Level	Expanded	Inspection based	Reactionary Planning	Inspection- based/moderate budget
	Average	Responsive only	Emergency	Critical needs only/minimal budget
	Minimal	Non-Responsive	No Planning	No planning/No budget

Mix of routine & inspection based
Priority Planning
Phased/allocated budgets



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Total Township Impervious Area (sq. ft.)

1.	Single-Family Residential	26,776,539
2.	Multi-Family Residential	2,655,592
3.	Commercial/Industrial	27,860,034
4.	Non-Profit/Tax Exempt	21,544,357
5.	Parks & Recreation	12,064,049
6.	Vacant/Unknown/Public Utility	4,610,600
7.	Agriculture	2,400,300
Total Township Impervious Area (sq. ft.):		97,911,471
Total Township Equivalent Residential Units (ERUs):		25,766

DTMA Stormwater Budget

- We bill roughly 7,700 customers
- Average resident pays \$78.00 per year (\$6.50 per month)
- Annual fees collected are \$1.6 million
- In 2018 we spent approximately \$1.1 million on construction
 - \$300,000 was spent on emergency repairs
- 2019 is on pace to see similar spending
- To date, we have secured approximately \$175,000 in grants



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Breakdown of ERUs



■ Percent of total ERUs

■ Percent of Total Accounts



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Accounts versus ERUs

Number of Accounts



■ Residential ■ Non-Residential

Number of ERUs



■ Residential ■ Non-Residential



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Example Implementation Steps & Timeline



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Concluding Remarks

- Critically evaluate the make up of your community along with the strengths and weaknesses of the municipality and authority.
- Get input from others - Can't stress importance of Stakeholders Advisory Committee enough!
- Don't be afraid to tackle challenges.
- Embrace the challenges.



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If you aim at nothing, you'll hit it every time. - Zig Ziglar



STORMWATER ANNUAL SUMMARY REPORT 2018



Michael Callahan, Stormwater Program Manager
mcallahan@dtma.com
www.dtma.com



EXECUTIVE SUMMARY

In 2018, Derry Township Municipal Authority (DTMA) entered its second year administering the Stormwater Management Program (SMP). Administering the SMP included establishing a SMP fee to support the program with designated funds to conduct maintenance and repair of the stormwater infrastructure within the Township of Derry. This report is a summary of the most significant activities conducted and major projects completed during 2018, as well as providing details of proposed 2019 projects.

Approximately 30 projects were completed in 2018. The minimum cost was \$550 and the maximum cost was \$705,000. The median cost was \$11,900. In total, approximately \$1,085,000 was spent on construction costs. Approximately \$312,000 of the construction repairs were attributed to unplanned repairs (emergency issues). The majority of the projects involved replacing failed corrugated metal pipe that had rusted to the point of deterioration.

It is anticipated that unplanned repair costs in 2019 will likely be similar to those experienced in 2018. Additionally, approximately \$675,000 of planned repairs are slated to be undertaken in 2019. DTMA staff will continue to review repair needs across the Township to develop the 2020 program of planned repairs and projects.

Condition assessment efforts were increased this year and approximately \$300,000 was spent on equipment, software, and hydraulic modeling to increase our knowledge of the stormwater system and its vulnerable components. DTMA received approximately \$175,000 in grants and cost share monies to advance the long-term strategy for the SMP.



Michael P. Callahan
Stormwater Program Manager



Wayne A Schutz
Executive Director

INFRASTRUCTURE

UPGRADES - Overall Cost:

\$1,085,000

A central responsibility of the SMP is the operation, maintenance, and restoration of the stormwater infrastructure. This includes inlets, pipes, basins, and other stormwater conveyance and treatment facilities. To that end, DTMA has compiled a lengthy list of projects to improve and enhance our stormwater management system. Those are described in more detail under EMERGENCY REPAIRS, CURED-IN-PLACE LINING, and BULLFROG VALLEY ROAD UPGRADES.



EMERGENCY REPAIRS - Cost: \$312,000

In the early stages of implementing the SMP, emergency repairs continue to be the priority. Eventually, the goal is to reduce the number of emergency repairs, and as the condition assessment of the stormwater assets is completed, move to a proactive and planned approach to system repair and maintenance. Much of the existing stormwater pipes are corrugated metal pipes that are prone to rusting and failure. By monitoring the condition of those pipes, we will be able to replace them before a failure results in sinkholes opening up in the streets. Below is a list of the emergency repairs completed in 2018.



KAYLOR ROAD (\$10,800):

Pipe failure and sinkhole

GROVE STREET (\$16,600):

Pipe failure and sinkhole

BULLFROG VALLEY ROAD (\$650):

Inlet box degradation and sinkhole

WALKER AVENUE (\$550):

Inlet box degradation and sinkhole

HAWTHORNE DRIVE (\$4,800):

Pipe failure and sinkhole

HOMESTEAD ROAD (\$4,700):

Inlet box failure and sinkhole



PEFFLEY ROAD (\$4,700):

Pipe failure and sinkhole

RED FOX DRIVE (\$4,700):

Inlet box failure and sinkhole

RALEIGH ROAD (\$4,700):

Pipe failure and sinkhole

MEADOW LANE (\$12,000):

Pipe failure and sinkhole

RIDGE ROAD (\$47,700):

Pipe failure and sinkhole

STONEGATE ROAD (\$4,700):

Pipe failure and sinkhole

DERRY WOODS BASIN (\$39,100):

Pipe and berm failure

SHOPES CHURCH ROAD (\$14,600):

Pipe failure and sinkhole

OLD HERSHEY ROAD (\$24,700):

Pipe collapse

SANDHILL ROAD (\$58,200):

Pipe failure and sinkhole

HILL CHURCH ROAD (\$12,600):

Pipe collapse

LIMERICK COURT (\$31,400):

Sinkhole, curb & pipe failure

BOATHOUSE ROAD (\$11,700):

Pipe failure and sinkhole

SUNNYSIDE DRIVE (\$1,000):

Pipe failure and sinkhole

BROOKLINE DRIVE (\$1,000):

Pipe failure and sinkhole

WYNDHAM ROAD (\$1,000):

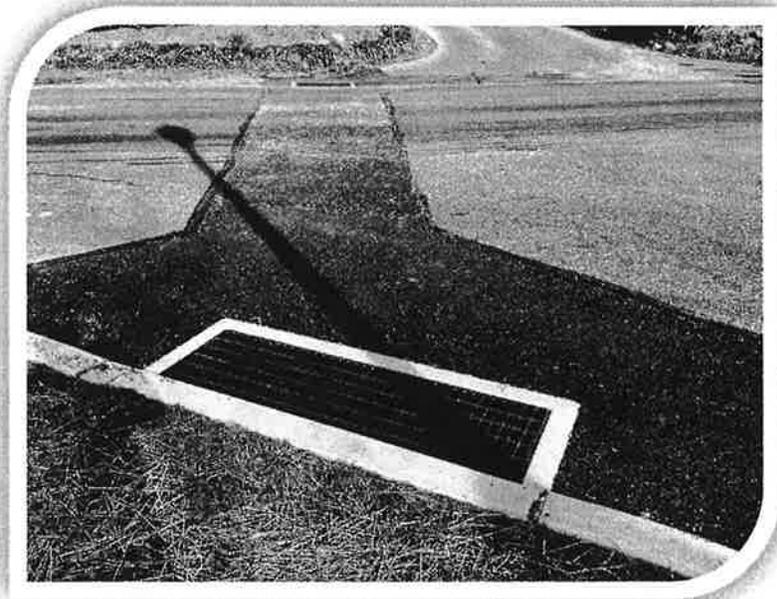
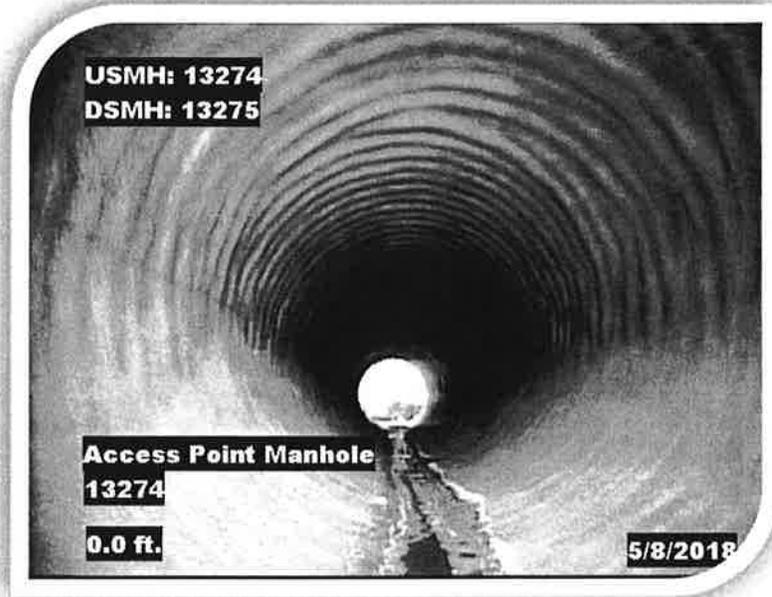
Pipe failure and sinkhole



CURED-IN-PLACE PIPE

LINING - Cost: \$68,000

In 2017, DTMA identified several stormwater pipes that were approaching failure. In cooperation with the Authority's sanitary sewer group, a jointly bid project to repair designated pipes with a cured-in-place (CIP) plastic liner was completed in 2018. The CIP approach eliminated the need to dig up the roadway and is generally cost effective in certain applications when compared to traditional dig and replace projects. By combining projects from both our sanitary and stormwater groups, lower unit pricing allowed both departments to realize lower project costs when the project was bid.



BULLFROG VALLEY ROAD UPGRADES -

Cost: \$705,000

In anticipation of a proposed 2019 paving project to be performed by the Township, numerous deteriorated stormwater facilities along Bullfrog Valley Road were addressed. The deteriorated inlets and pipes were often crushed and clogged with sediment and debris. Additionally, an engineering analysis indicated the need to increase the capacity of certain pipes. As a result, the pipe and inlet network along Bullfrog Valley Road was redesigned

and the project was bid and awarded in 2018. The work, which commenced in the fall of 2018, was delayed due to the unusual wet weather (precipitation) that occurred during the latter part of 2018. Although most of this work has been completed before the end of 2018, the remaining portion of the work will be completed in the spring of 2019.

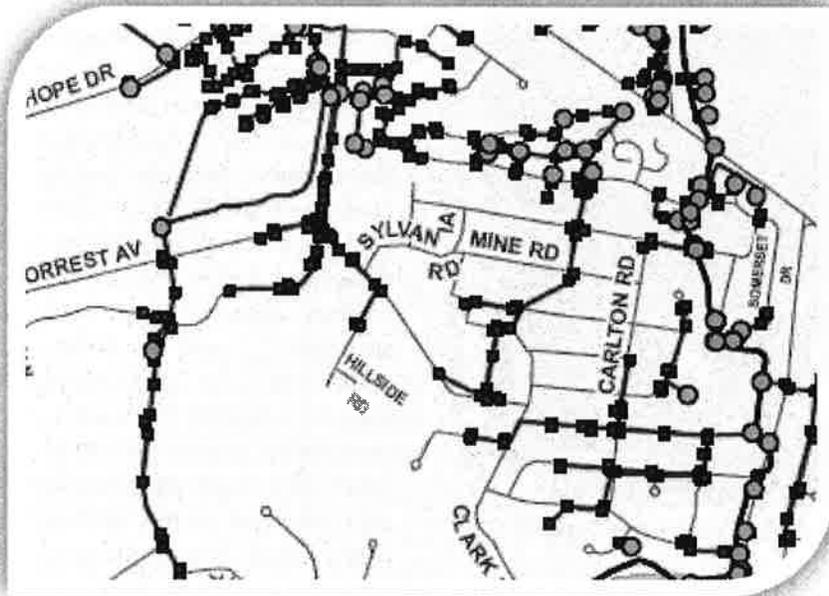
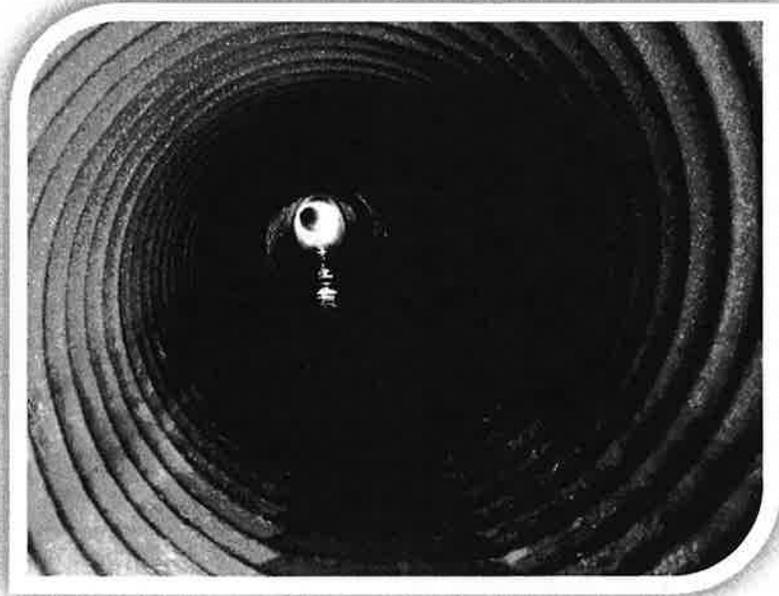
CONDITION

ASSESSMENT –

Cost: \$300,000

Establishing an accurate assessment of the stormwater infrastructure assets is critical to developing a long-term asset management strategy. To that end, several initiatives have been undertaken to improve our understanding of the stormwater system and will provide decision-making data on which future improvement projects will be based. A second camera truck and two additional Collection System (pipeline) staff were added in 2018 to facilitate inspection and

assessment of our stormwater pipe network. Additionally, DTMA began the implementation of an upgraded asset management system that will work in conjunction with our camera trucks and our digital GIS mapping data to facilitate more cost-effective assessment and management of our infrastructure



assets. Finally, we partnered with the US Army Corps of Engineers on a 50/50 cost share program to map assets and model water flow in a watershed tributary to Swatara Creek along Middletown Road. This area has experienced severe flooding during high-intensity precipitation events and the modeling results will assist us in determining the corrective actions or mitigation activities that can be taken to improve conditions.



GRANTS AND AWARDS

Awarded: \$175,000

A key tenet of our stormwater management program is the identification and acquisition of outside funding sources to help accelerate our project implementation. To this end, we continue to partner with the US Army Corps of Engineers in their 50/50 cost share program, which results in \$50,000 worth of Army Corps services. The Authority was an inaugural partner with the Chesapeake Bay Foundation and their 10 Million Tree Partnership to secure trees, tubes, and stakes for several tree planting projects across the Township.

Additionally, we worked with the Dauphin County Conservation District on a DCNR Riparian Buffer Planting grant to expand riparian buffers as part of our Pollution Reduction Plan. We applied for and received \$103,000 from the Mariner East 2 Pipeline civil penalty fund for restoration of the stream running adjacent to Bullfrog Valley Road. We also received a \$15,000 grant from the Growing Greener program to begin stormwater basin improvements in the Oakmont Community. These grants will allow us to complete early-stage work on several watershed-scale improvements and position the Authority to apply for additional grant monies in the future.

CONCLUSION

The projects completed in 2018 focused mainly on repairs to failed infrastructure. In total, approximately \$312,000 worth of unplanned or emergency repairs were completed. It is anticipated that a similar magnitude of that type of work will occur in 2019 as much of the stormwater infrastructure in the Township is aging and reaching the end of its useful life.

In addition to the unplanned repairs, DTMA completed \$773,000 of planned infrastructure improvements and upgrades. DTMA is planning for the repair and/or replacement of additional pipes and associated stormwater infrastructure across the Township as part of a proactive effort to begin addressing our aging infrastructure before complete failures occur. By so doing, we are able to address the issues in a more organized and methodical manner that will reduce costs and minimize disruptions to the community. It is anticipated that an additional \$675,000 will be spent in 2019 on addressing known problem areas.

As part of the proactive program development, DTMA has undertaken a digital mapping upgrade as well as implementing an asset management software, purchasing a second pipeline inspection video camera van, and increasing staff levels to allow for more rapid condition assessment of the stormwater infrastructure. These program improvements will allow DTMA to more accurately prioritize repair needs and avoid catastrophic failures and most importantly, provide the foundation for our long term goal of moving the stormwater program level of service from an emergency response/reactionary level to the desired comprehensive proactive level envisioned during the SMP development with the Stormwater Advisory Committee during creation of the program.

Beyond the maintenance of the traditional stormwater infrastructure, DTMA is moving forward with several larger-scale projects to deal with areas of localized flooding and projects related to compliance with our MS4 permit obligations. These multi-year projects require considerable investment upfront to fully comprehend the complex issues and formulate a sound approach to design and eventual resolution. Many of the grants we received will lay the foundation to bring those projects to fruition over the next several years.

Adam Supplee Speaking Notes: Meeting on Stormwater Solutions

- Landscape Architects are a licensed profession in PA and across the country.
- Last year (2018), the amount of precipitation for SE PA was approximately 74", while the average was 41.5"
- One inch of precipitation falling on one acre of ground is equal to 27,000 gallons of water
- For over a century, landscape architects have designed GSI, *Green Stormwater Infrastructure*, including nationally known projects such as Boston's Emerald necklace, New York City's Central Park
 - Landscape Architects design for a balance of stormwater mitigation and aesthetics
 - GSI recharges stormwater into the ground
 - GSI supports the base flow of streams, this groundwater cools and regulates stream temperatures, benefitting the native stream ecosystem
- Landscape Architects begin design with a detailed site analysis, to identify and protect natural and cultural features including
 - Existing trees and woodlands: (complete, functioning woodland ecosystems provide complex environmental benefits including purification of air, water, soil and support of animals. Mature, functioning woodlands are difficult to replace or re-establish and should be preserved rather than 'reconstructed')
 - In a dense natural woodland environment, the surface area of tree leaves catches small rain events before they even fall to the ground. Even in winter, the absorbing surface of a tree's bark helps to absorb water for later evaporation. Trees also draw significant amounts of water from the ground and release the groundwater to the air through a process called evapotranspiration.
 - Flood Plains: As we have seen throughout Pennsylvania, devastating flooding has become more extreme and has been occurring more often. We need to consider the impact of flooding on our new and existing communities. Preserved natural or restored floodplains provide areas to absorb the excess volume of water during a storm event.
 - High water tables: Water tables and percolation rates should be evaluated when planning for new development. In Pennsylvania, too many new homes are being built in areas with high water tables only to find that sump pumps need to run constantly to keep the natural groundwater at bay. If there is a power outage, basements flood and property damage is imminent if a natural gravity drainage solution is not included.
- With a complete analysis of existing conditions, Landscape Architects can plan to keep infrastructure like roads & buildings as well as people out of harm's way.
- Green stormwater infrastructure can take many forms
 - Rain gardens- shallow stormwater collection areas vegetated with shrubs, plants and trees
 - Complete Streets include more than just vehicular traffic, they include stormwater infiltration areas, plus many other assets such as room for active transportation

(human powered transportation), mass transit, and opportunities for community interaction.

- Pervious pavement can collect rainwater and infiltrate it into adjacent vegetated areas such as street trees
- Green roofs collect and store water on buildings and release it slowly through drainage or evapotranspiration. Green roofs also stay cooler in the summer, reducing urban heat islands.
- Preserved green space used for GSI can also serve as public spaces and parks
- Green cemeteries offer a way to infiltrate stormwater that would otherwise run off of mowed lawn cemeteries.
- Grayfield and brownfield sites offer an opportunity for ecological restoration and new stormwater infiltration via GSI, while still providing a new functional development on the site.
- Streambank restoration and floodplain enhancement projects can increase flood storage capacity and reduce sediment loading in our streams.
- Greenways preserve stream corridors including the surrounding lands to be used as linear parks while providing stormwater volume and quality benefits.
- GSI offers multiple benefits to communities
 - Rather than the traditional large tank in the ground or large detention basin, trees, plants and gardens not only mitigate stormwater flooding, they also purify the water, and provide Aesthetic enhancements to communities.
 - Tree-lined streets and nearby open spaces increase real estate values.
- Zoning. Landscape Architects review existing zoning for potential improvements by promoting development in areas that are not in environmentally sensitive areas and by encouraging stormwater recharge throughout a community rather than shuttling water off to large regional basins or tanks.
- Regional stormwater basins are not the solution. In fact, some of the older stormwater basins are cause for downstream flooding.
- Stormwater management needs to be systemic, the design for stormwater control needs to be hyper-local.
- In cities with historic combined sewer systems (piping systems designed to capture stormwater and sewer water in the same pipe), GSI has been adopted as a solution to combined sewer overflows (CSO's). In cities including Philadelphia, Lancaster and Washington DC, GSI has been adopted as an alternative to increases in gray infrastructure (tanks and pipes).
- The American Society of Landscape Architects offers technical documents, metrics, and project examples that offer real world examples on their website, including the following...
 - <https://www.asla.org/stormwatercasestudies.aspx#pennsylvania>
 - https://www.asla.org/uploadedFiles/CMS/Government_Affairs/Federal_Government_Affairs/Banking%20on%20Green%20HighRes.pdf