

STORMWATER ANNUAL SUMMARY REPORT 2018



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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

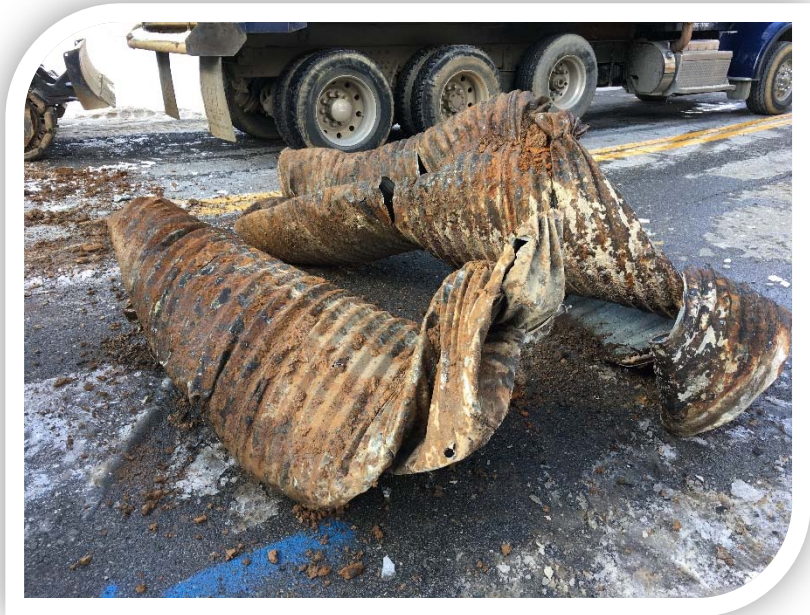


Wayne A Schutz
Executive Director

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):

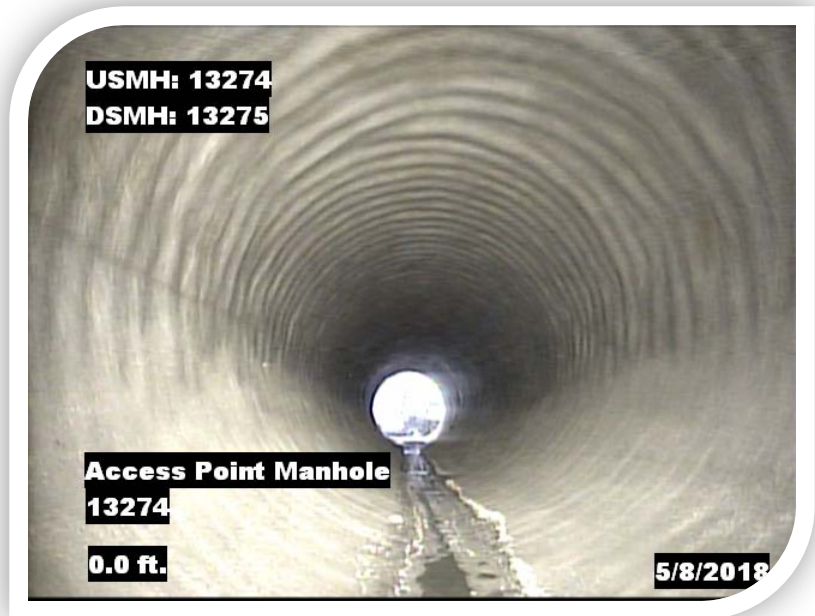
Pipe failure and sinkhole



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

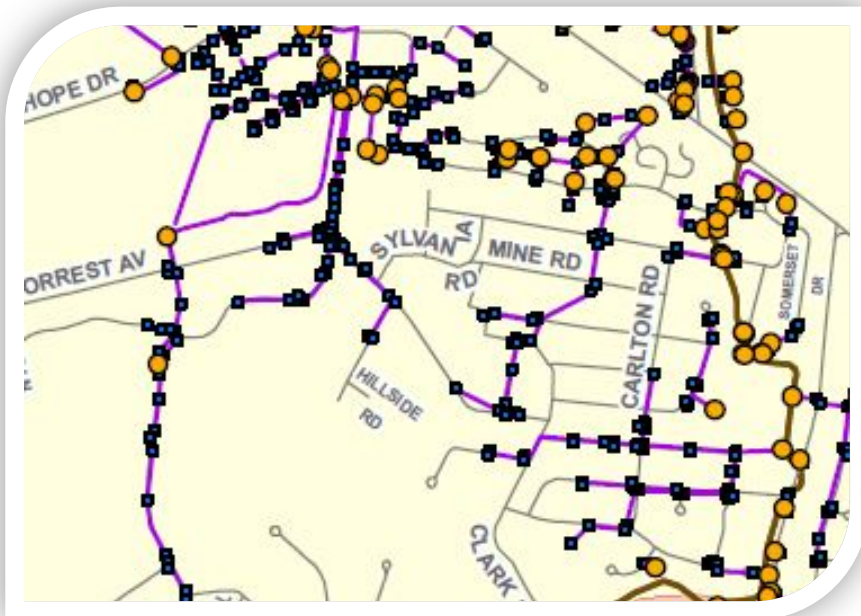
In anticipation of a proposed 2019 paving project to be performed by the Township, numerous deteriorated stormwater facilities along Bullfrog Valley Road were addressed. The deteriorated inlets and pipes were often crushed and clogged with sediment and debris. Additionally, an engineering analysis indicated 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.

DTMA 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 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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Aging Infrastructure



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Watershed-scale Issues



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Big Storms



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Cloud Bursts



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Continual Maintenance



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Emergency Repairs



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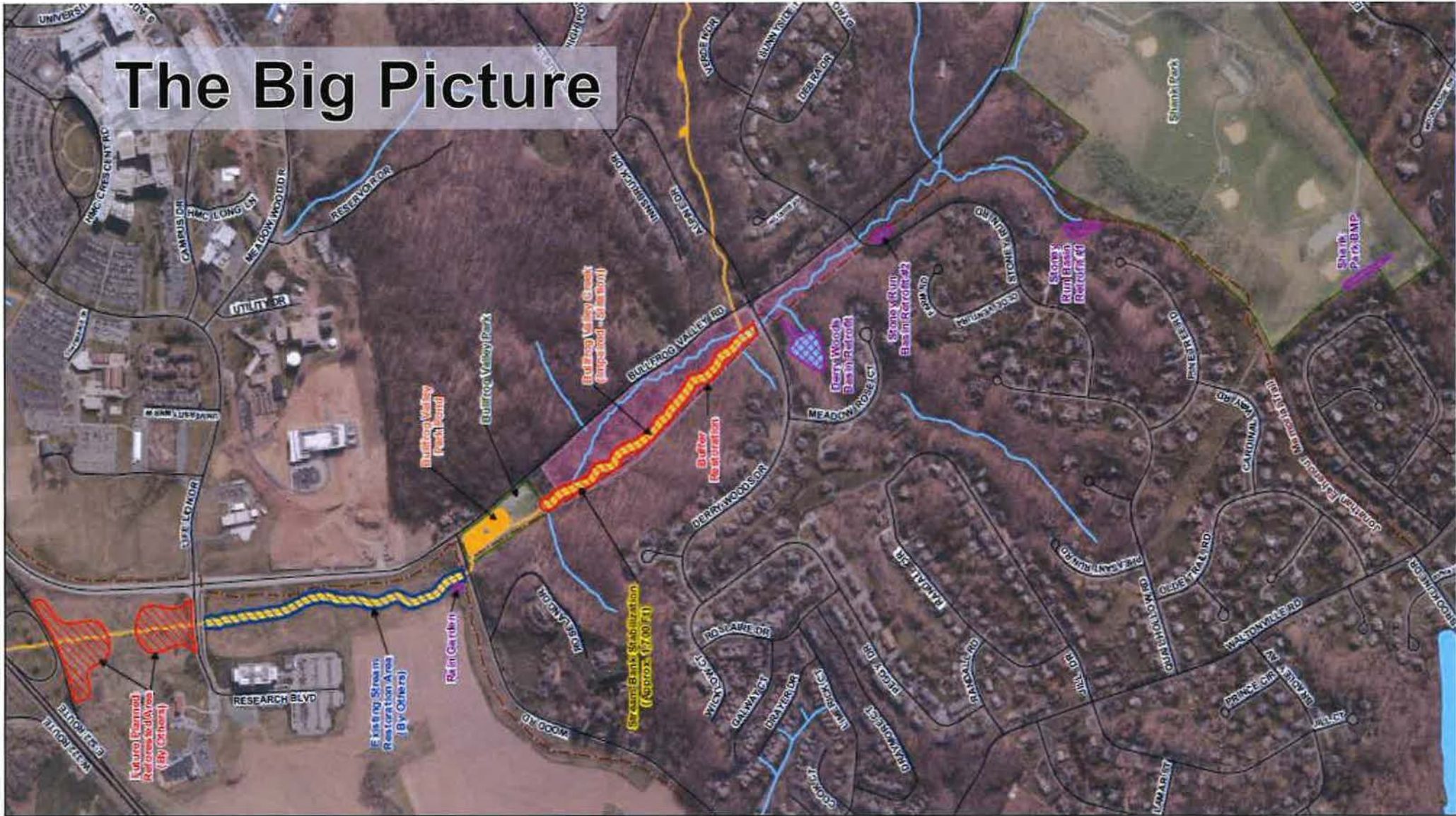
The Second Thought Infrastructure



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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 apportions 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 USACE (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 to evaluate program further



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Program Level of Service

	Level of Service	O&M	Planning & Compliance	Capital Improvements
Desired Level →	Exceptional	Fully Preventative/ 100% Routine	Comp planning, NPDES compliance	Prioritized/Fully Funded
	Comprehensive	Mix of routine & inspection based	Priority Planning	Phased/allocated budgets
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

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 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 anticipated to see similar spending
- To date, we have secured approximately \$175,000 in grants



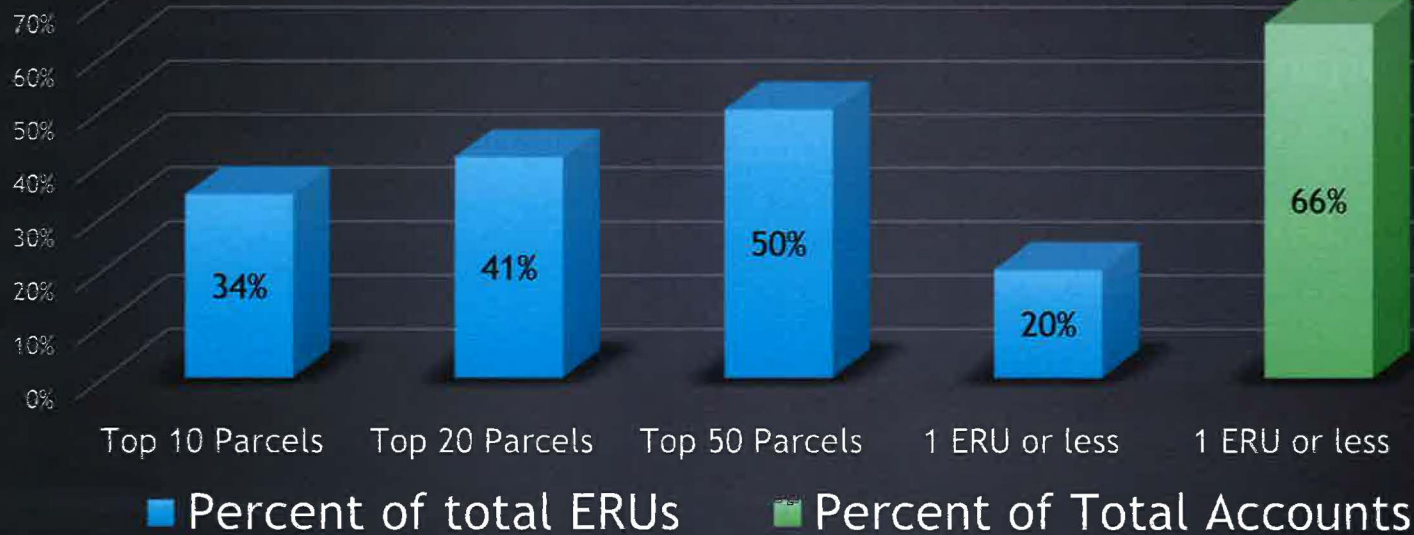
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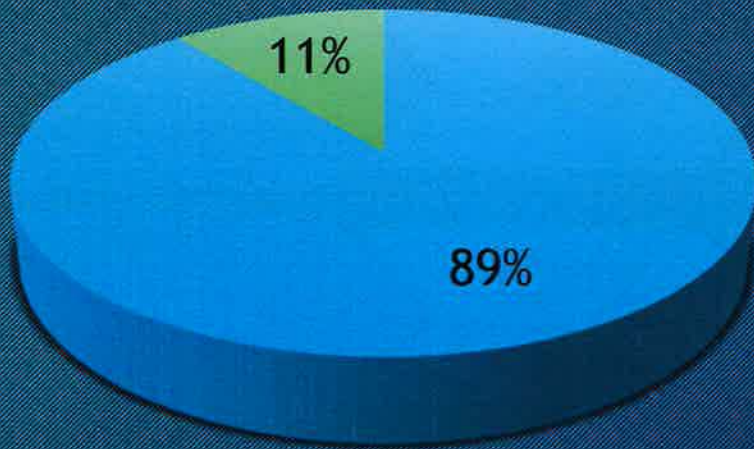
Breakdown of ERUs



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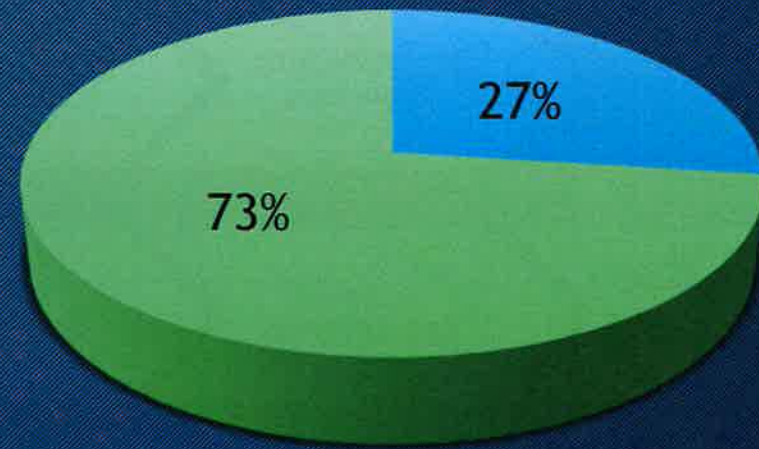
Accounts versus ERUs

Number of Accounts



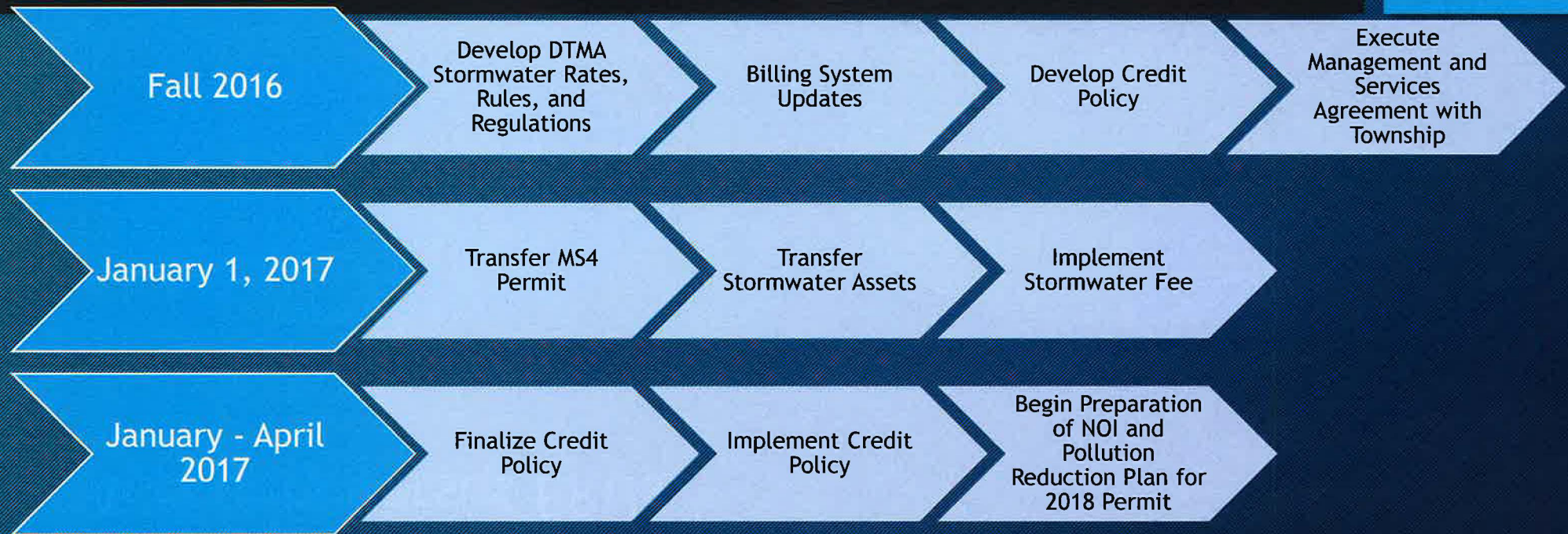
■ Residential ■ Non-Residential

Number of ERUs



■ Residential ■ Non-Residential

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 SAC 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

