Stormwater Needs Assessment Summary Report

South Fayette Township

Submitted to:

South Fayette Township, Allegheny County, PA
515 Millers Run Road
Morgan, PA 15064

Submitted by:

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Carnegie, Pennsylvania

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Project No. 3410141017


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EXECUTIVE SUMMARY

The following summary report discusses the process by which a future 10-year stormwater program plan for South Fayette Township (the Township) was developed through both detailed analysis and the incorporation of input and feedback from Staff and the Stormwater Needs Assessment Committee (SNAC) along the way. The existing program was evaluated to identify and assess where additional support may be needed to meet the goals of the community now and into the future, namely:

- Maintain and Replace Aging Infrastructure
- Protect Water Quality
- Address Flooding Issues
- Meet Regulatory Compliance Requirements
- Plan for Community Growth

The resulting future program can be described in terms of its overall focus and priorities as follows:

Years	Focus	Priorities
1 to 5	**Understanding the System**	1. Learn all that we can about the system: • Extent of the systems • Ownership • Current conditions • What investment is needed 2. Build an asset management system / database 3. Maintain the current program with some additional investment in key areas to maintain a consistent baseline of service. At a minimum provide a basic LOS for all elements.
6 to 10	**Implementing the Optimized Program**	1. As the system inventory is completed, identify the required resources to achieve the goal of fully mature program - proactively managed and well maintained. 2. Ramp up resources needed to meet the refined program needs. 3. By Year 10, achieve targeted LOS for each program element.

The overall goal of the 10-year program plan would be to move the Township from what could be described as a reactive, unplanned, under-resourced and emergency oriented program to a proactive, planned, supported and scripted program.

In terms of financial impact, the results of the stormwater needs assessment would suggest the township may need triple the available program budget in the next 10 years to provide the necessary resources to meet the recommended target level of service. While this is an increase from the current spending level for South Fayette, many Pennsylvania communities who have undertaken similar evaluations have identify the need to increase their program budgets by similar amounts.

The table below presents the estimated program costs for the current program, and average annual costs for the future program for the first and second 5 year periods.

Total Average Annual Funding

#	COST CENTER	Current LOS	Total Avg. Cost Years 1 to 5	Total Avg. Cost Years 6 to 10
1	Program Administration	$5,000	$65,000	$65,000
2	Infrastructure Operation & Maintenance	$241,000	$405,000	$538,000
3	Engineering, Compliance & Asset Management	$47,000	$276,000	$218,000
4	Capital Projects, Equipment & System Replacement*	$48,000	$281,000	$400,000
	TOTAL	**$341,000**	**$1,027,000**	**$1,221,000**

While the program plan does not necessarily address all of the Township's potential stormwater issues, it would make strides in moving the current program from a reactive program to one that is deliberate and planned, making better use of available funding and targeting investment where it is most needed. The plan would also help in positioning South Fayette for the future, providing leadership and staff the opportunity to maximize the community's investment in existing stormwater infrastructure while putting into place the necessary information, staffing and resources needed to allow for continued growth.

1.0 INTRODUCTION

South Fayette Township (the Township) retained Amec Foster Wheeler Environment & Infrastructure, Inc. (formerly AMEC) in August 2014 to assist the Township in reviewing their current stormwater program, assessing potential adjustments to the program and estimating the level of funding needed to support those changes. The needs assessment is intended to help provide an understanding of overall stormwater service and funding needs, by considering the following questions:

1. What is the Township currently doing in terms of stormwater management and what is the current estimated annual expenditure?
2. What stormwater program priorities should guide the Township in the next three to five years?
3. What significant program improvements would the Township like to make and what would the associated approximate costs be?
4. What are the immediate next steps needed to evaluate funding options should a decision be made to move forward with a further analysis?

This report provides a high-level summary of the findings of the stormwater needs assessment, presents the draft program plan and identifies immediate next steps.

2.0 APPROACH

This initial phase of work has focused on developing a future stormwater program plan for the Township by:

- *Evaluating drivers and building a compelling case for improving the Township's stormwater services to better meet the community's needs both now and in the future,*
- *Building an internal vision and understanding of both stormwater program and funding needs, on a multi-year horizon.*

The future program plan was developed in close consultation with Township staff. This included:

- A review of available data and reports,
- Background research, and
- A series of interviews and discussions.

This analysis led to understanding of the current program and drivers for change, identification of goals and priorities for the future program and an assessment of the gap between the current program and the desired program. In addition to the dialogue with Township staff, a Stormwater Needs Assessment Committee (SNAC) was conveyed to provide their input on recommendations and more importantly provide external feedback and input on the Township's priorities and needs – informing the development of the future program.

Both staff and SNAC members worked through a straightforward process as illustrated in the table presented on the following page. The results from each "step" in the process are briefly summarized in the following sections of this summary report. The supporting documents, developed in conjunction with each step are provided in the appendix for further reference.

Table 1 – Stormwater Needs Assessment Approach

Step	Task	Purpose
1	**Current Services Inventory and Cost**	Capture and assess existing program details and costs.
2	**Program Analysis**	Understand future program drivers and challenges.
3	**Program Priorities and Goals**	Develop program priorities and objectives for the stormwater program over the next 5 to 10 years.
4	**Identification of Gaps and Program Needs**	Identify the gaps between the current and desired future program; assess and identify the preferred level of service option needed to meet the long-term goals.
5	**Future Program Development**	Translate the preferred level of service option into a 10-year program plan.
6	**Next Steps**	Identify immediate next steps to aid in further evaluation and implementation of potential program adjustments.

2.1 Stormwater Needs Assessment Committee

In developing a future program plan, it is important to gain input and feedback from members of the community. To aid in this process, the SNAC was convened to help:

- Develop a better understanding of the Township's existing and future stormwater management challenges and needs.
- Recommend appropriate Levels of Service and the resources required to meet the identified needs.
- Examine and discuss how stormwater in South Fayette should be addressed over the next 5 to 10 years.
- Inform recommendations on the stormwater program plan.

The SNAC we asked to represent diverse voices of the community, attend and be involved at three meetings, provide feedback and input throughout the needs assessment and ultimately inform the recommendations to South Fayette Board of Commissioners. The following members of the Stormwater Needs Assessment Committee, supported the study with their time, input and feedback:

Jerry Brown
Cindy Cox
Steve Frank
Jeremy Galish
Doug Kaine
David Pope
Stephanie Silver
Debi Walker

3.0 CURRENT SERVICES INVENTORY AND COST

The purpose of assessing the Township's current program is to understand the Township responsibilities, services and costs related to stormwater activities. By understanding the current state of the program, the Township and stakeholders will be able to make informed decisions about how to develop a program that best meets stormwater infrastructure related needs within the community.

A copy of the overall Current Services Report is provided in **Appendix A**.

3.1 Township Setting

South Fayette Township, established in 1842, is a growing community in Allegheny County, Pennsylvania, located about 17 miles southwest of Pittsburgh and 15 miles from Pittsburgh International Airport. According to the US Census Bureau, the Township had a population of 14,416 in 2010.

The Township covers a total area of approximately 20.95 square miles. The topography of the Township is mostly wooded with small hills and floodplains draining to four main streams. The major land uses are residential (25% of total land area), agricultural (24%), and industrial (6%) with smaller percentages of institutional uses (schools, municipal operations), open space, right-of-way, and vacant/wooded lots.

The Township consists of seven watersheds, all of which eventually discharge to the Chartiers Creek and ultimately into the Ohio River. The watersheds include: Chartiers Creek, Coal Run, Dolphin Run, Fishing Run, Millers Run, Thoms Run and Robinson Run. All of the main streams are considered impaired, meaning they do not meet designated water quality criteria. Multiple impairments exist throughout the watershed including those related to acid mine drainage, nutrients, PCBs, and sediment.

3.1.1 Current Township Stormwater Infrastructure Inventory

Based upon GIS data and figures provided by Township Staff, the Township's current stormwater infrastructure and related assets include:

- 65 total miles of Township roads and an additional 15 miles of State roads, maintained by the Township via contractual agreement with PennDOT;
- 2300 catch basins*;
- 204 manholes*;
- 32 miles of stormwater pipe*;
- Over 132 outfalls*; and
- 1 detention basin.

**Estimated figures.*

3.1.2 Regulatory Requirements

South Fayette Township is subject to the National Pollution Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit requirements. This permit, administered by PADEP, governs the discharge of pollutants in stormwater runoff from municipal storm sewers. The MS4 permit requires the Township to perform and report on specific tasks associated with the following six Minimum Control Measures (MCMs) which are intended to protect water quality:

I. Public Education and Outreach
II. Public Participation and Involvement

III. Illicit Discharge Detection and Elimination
IV. Construction Site Stormwater Runoff Control (Erosion Control)
V. Post-construction Stormwater Management in New Development and Redevelopment
VI. Pollution Prevention and Good Housekeeping Practices of Municipal Operation and Maintenance

3.2 Current Stormwater Functions

The stormwater management services and functions provided by the Township are presented in **Table 2**. While many Township personnel support stormwater related activities throughout the Township the bulk of services in South Fayette are primarily handled by staff from the Planning and Engineering and Public Works departments.

Table 2 - South Fayette Township Stormwater Functions

Township Office	Functions
Township Manager	Coordinates overall Township operations and services including oversight and planning for Township stormwater management activities and capital improvements. Responsible for coordinating annual budget and managing staff.
Director of Planning & Engineering	Responsible for the enforcement of the Township's land development, zoning ordinances and flood plain management ordinances. Coordinates updates as needed. Acts as the liaison on the County's Stormwater Management planning efforts and the Township's Environmental Advisory Committee (EAC). Coordinates response to property owner stormwater-related complaints. Manages the Township's GIS system and mapping activities. Coordinates the design and construction of capital improvement projects. Responsible for MS4 Permit Compliance activities and reporting. Responsible for managing permitting, plan review and inspection services performed by the Consulting Engineer, Pubic Works personnel, Code Enforcement Officer, and Assistant Code Enforcement Officer. The services for which the Director of Planning and Engineering provides oversight include: • Review and processing of development stormwater management plans • Planning and Engineering studies • Stormwater conveyance facility inspections • Construction inspections The Director also handles contract procurement, payment and invoicing for all service and Township capital projects.
Consulting Engineer	A contracted position, the consulting engineer provides review of subdivision and land development plans including review of stormwater management and erosion and sediment control plans.
Code Enforcement Officer and Assistant Code Enforcement Officer	Assist the Director of Planning and Engineering in providing services related to GIS mapping, site inspections, and land development plan review. Respond to property owners stormwater-related complaints.
Finance Director	Responsible for overall accounting, reporting and management of financial affairs including accounting, budgeting, procurement, debt service, payroll and billing. Note: collection of Township taxes and fees are provided by third party vendors.

Township Office	Functions
Department of Public Works	Performs Township stormwater services and activities including: • Storm sewer inspection and maintenance • Catch basin cleaning and repairs • Storm sewer repairs and minor replacement projects • Street sweeping • Pre and Post storm response • Roadside ditch maintenance Maintains fleet vehicles as well as township facilities including material storage areas. The Public Works Director and Superintendent assist the Director of Planning & Engineering in responding to property owner stormwater related complaints. The Public Works Director and Superintendent oversee and manage all maintenance contracts.
Municipal Authority Township of South Fayette	MATSF provides support services including: GIS Consultant Services and Televideoing support. MATSF also provides equipment (i.e. mini-excavator) to the Township Public Works Department.
Solicitor	Provides overall legal support to the Township.
Environmental Advisory Council	The EAC is a 5-member volunteer committee appointed by the BOC. The EAC supports stormwater related activities in a variety of ways, by pursuing and assisting with stream habitat rehabilitation projects, review of development plans related to environmental concerns and pursuit of grant and funding opportunities.

Note: While several outside agencies, such as the Allegheny County Conservation District (ACCD) and the Pennsylvania Department of Environmental (PADEP) support oversight of stormwater related activities in the Township, only the responsibilities and needs of the Township were considered in the development of the future program plan.

3.3 Current Stormwater Services and Costs

The first step in evaluating the current stormwater program is to define the current level of service being provided. This baseline information was used to assess the Township's existing program and to identify needs and gaps. The current stormwater program information was organized under four Major Service and Cost Centers:

1. Program Administration
2. Infrastructure Operations and Maintenance
3. Engineering, Compliance and Asset Management
4. Capital Projects, Equipment and System Replacement

A detailed description of the existing level of service for each of these cost centers is provided in the Current Services Report provided (refer to **Appendix A**).

To understand the full cost of stormwater management, both the direct and indirect costs associated with each Major Service and Cost Center were identified. This included the costs of all personnel that are engaged in maintaining and managing stormwater activities, as well as non-payroll expenses. Specific items covered include:

- Equipment purchases,
- Equipment maintenance and usage,
- Training and education,
- Non-personnel maintenance and operation costs,
- Materials costs, and
- Administrative and office costs.

Table 3 presents the estimated 2014 stormwater-related costs based on budget information, awarded contracts, and activity reports maintained by the Township. Estimates for these costs are based on interviews and discussions with Township staff. As these costs fluctuate from year to year, the table provides a snapshot of the estimated costs for 2014 only.

Note - The costs associated with the review of land development plans and grading permits are largely covered by development review/escrow and grading permit review fees and not included in the costs presented below.

Table 3 - 2014 Stormwater Program Costs

#	COST CENTER	ESTIMATED COST (2014)
1	Program Administration	$5,000
2	Infrastructure Operation & Maintenance	$241,000
3	Engineering, Compliance & Asset Management	$47,000
4	Capital Projects, Equipment & System Replacement*	$88,000
	TOTAL	**$381,000**

*There were no planned capital improvements in 2014 – any replacement activities were carried out by the Township Public Works Staff and captured under Cost Center #2 – Infrastructure Operation & Maintenance.

4.0 PROGRAM ANALYSIS – DRIVERS AND CHALLENGES

South Fayette Township is faced with several local drivers that impact the need to reevaluate current and future public stormwater management services – namely an aging infrastructure, increased development, more intense rain events, and evolving federal and state stormwater regulations. The following section highlights the key challenges and identifies preliminary gaps in the current services that may need to be addressed to meet the stormwater management needs of the community. A full summary of the program drivers and challenges is provided in **Appendix B**.

- South Fayette has experienced continued growth since the early 1980s. The Township's 2013 Comprehensive plan notes that there is capacity for an additional 20,000 residents in the future. With continued residential growth, anticipated accelerated expansion of commercial and industrial development and the planned Turnpike Extension with the creation of 576 Beltway (aka State Route 576), the Township will need to plan for:
    - New public infrastructure including roads, stormwater conveyance, stormwater best management practices, and stream crossings.
    - New private stormwater management infrastructure, which will need to be monitored and inspected.

  - Increases in impervious area requiring additional management of runoff and potential pollution.
- The majority of existing stormwater best management practices (BMPs) are currently maintained by private property owners and/or home-owners associations.
  - As property ownership changes, the maintenance responsibilities need to be clearly communicated to ensure proper on-going operation.
  - If not maintained these systems have the potential to impact upstream and downstream property owners alike.
  - The township does not currently perform routine inspection of these systems.
- Township staff must maintain existing systems and manage previous public investment in stormwater infrastructure.
  - The current stormwater program is reactive to changes in conditions.
  - A large portion of the Township's existing stormwater system is beginning to approach the end of its anticipated service life and will eventually need replaced.
  - The increasing frequency and intensity of rainfall events makes it more critical to maintain system capacity to minimize potential public health and safety hazards.
  - The township does not currently have a routine maintenance, repair or replacement program.
  - Expansion of Township owned and maintained infrastructure will put further pressure on existing resources.
  - The township will likely need to address long-term maintenance and replacement needs to maintain pace with the growing community.
- State and Federal mandates require the Township to meet the Federal Clean Water Act as part of the Township's Municipal Separate Storm Sewer System (MS4) Permit.
  - Permit requirements continue to evolve and require additional effort at the local level to ensure compliance.
  - Water quality related requirements and regulations are also evolving.
- It is the goal of Township Staff to maintain a high-level of service and be able to serve the community while meeting the demands of a growing community. However, limited available resources including personnel and funding negatively impact the Township's ability to address increasing planning, engineering, operation and maintenance needs.
- Township Staff would like to expand the current stormwater program to better meet today's system constraints and regulatory mandates and to allow the Township to plan effectively and efficiently for continued growth without adversely impacting current residents and businesses.

5.0 PROGRAM PRIORITIES AND GOALS

The following program priorities and goals are based on discussions with South Fayette staff and the SNAC; these were developed following a review of current Township stormwater services as well as the drivers and challenges discussed in the previous section. These statements are intended to articulate the priorities and goals for the long-term stormwater program over a multi-year horizon (i.e. 5-10 years) rather than immediate/emergency based needs. A full version of the priorities and goals are provided in **Appendix C**.

Priorities:

Based upon the stormwater related challenges and drivers facing South Fayette, the following priorities were identified**:**

- Maintain and Replace Aging Infrastructure
- Protect Water Quality
- Address Flooding Issues
- Meet Regulatory Compliance Requirements
- Plan for Community Growth

Goals:

- Inventory the existing stormwater infrastructure system, both public and private, to assess the condition and function of structural elements, and determine parties responsible for operations and maintenance.
- Create a proactive and systematic maintenance, repair and upgrade program to address aging infrastructure issues.
- Establish dedicated and sustainable funding for stormwater management activities to support an appropriate ongoing program that addresses the Township's stormwater priorities and long-term needs.
- Enforce local stormwater management requirements and protect local water resources through a planned inspection of Best Management Practices and enforcement operations and maintenance agreements.
- Reduce the threat to public safety and local property from stormwater runoff and flooding by actively working with property owners and the development community to address known problem areas.
- Collaborate with local watershed groups and municipalities to promote water quality protection and projects that address local water quality impairments over time.
- Undertake watershed planning efforts to identify and implement projections that protect water quality, habitat and natural channels by proactively managing flows and pollution while supporting continued community growth.
- Adopt a regulatory compliance program that meets the requirements of the Township's Municipal Separate Storm Sewer System (MS4) Permit.

6.0 IDENTIFICATION OF GAPS AND PROGRAM NEEDS

6.1 Program Gaps

Through interviews with staff and review of existing documents, Amec Foster Wheeler and Township staff have identified a working list of the current stormwater program's limitations and gaps, organized by the

same Cost Centers used in the Current Services Report. These gaps help to identify current program elements that may require an increased level of service, additional staffing support or other resources. Some gaps may require new services be implemented to better meet the needs of the community. The complete gap analysis is provided in **Appendix D.**

Infrastructure Operations & Maintenance

- **Stormwater Conveyance System Cleaning and Repairs** - Regular cleaning, inspection, and stormwater infrastructure maintenance tasks are not completed on a routine basis, but are completed in conjunction with paving activities.
- **Culvert and Channel Maintenance** - The Township clears channels that are known problem areas prior to a storm, other areas are addressed in a reactive fashion and only in the event of an emergency.
- **Maintenance Planning** - There is no comprehensive maintenance plan in place to help direct and prioritize maintenance activities
- **Private Stormwater Management Facilities –** The Township does not currently perform routine maintenance on private stormwater management facilities.

Engineering, Compliance and Asset Management

- **MS4 Permit Compliance –**South Fayette Township is subject to Municipal Separate Storm Sewer System (MS4) permit requirements as administered by the Pennsylvania Department of Environmental Protection (PADEP). Additional support is needed to maintain compliance.
- **Existing Conditions Assessment** - No dedicated/systematic inspection and assessment plan has been established for stormwater infrastructure.
- **System Mapping and Asset Management** – As noted in the current service report, the Township does not have complete mapping of the existing stormwater system and related infrastructure.
- **Stormwater Facility Inspections** – The Township does not currently perform routine inspection of private or public stormwater management facilities.
- **Engineering Design –** The Township performs limited in-house engineering design.
- **Ordinance and Construction Standards Development and Updates –** Township staff have expressed a need to improve and create stormwater-related construction standards, beyond those covered by the road construction standards.
- **Watershed Planning Support –** Staff have indicated the need for larger scale watershed planning in order to identify management and infrastructure strategies that address existing flooding and water quality impairments; as well as to respond to continued pressures from ongoing development.

Capital Projects, Equipment & System Replacement

- **Capital Projects** - Other than small sections of in-kind storm sewer replacement, the Township has not taken on any new capital projects related to stormwater management in at least the past 5 years.
- **Water Quality Projects** – A visual assessment of 3 of Township's 7 watersheds was conducted by the South Fayette Conservation Group in August 2013. The resulting report identified over $7.1M of projects throughout the Township that could be implemented as part of the future stormwater program.

- **Storm Sewer Replacement** -. Staff estimate that approximately 500 feet of storm sewer pipe was replaced in 2013 (this equates to approximately 0.3% of the existing system). There is no dedicated or systematic pipe replacement program established.
- **New and Replacement Equipment** - There is currently no dedicated fund to routinely replace the estimated $1.46M in equipment utilized in performing stormwater activities. .

Program Administration

- **Contracts and Procurement** – Depending on the extent of the future program, the Township staff likely do not have enough capacity to oversee an increase in engineering, construction, and other related services.

6.2 Level of Service

When establishing a formal stormwater management program, it's important to define the Township's activities and services as well as the level at which these services are offered across a planned time-horizon. This is often referred to as the level of service (LOS) and sets the foundation for estimating the annual program costs. Establishing the services and associated costs helps to identify the funding that may be needed to support the program. This approach, which considers the full extent of resources needed to successfully manage stormwater, helps to better estimate and identify the total cost of stormwater related activities. Once a LOS target is established, a multi-year program plan can be developed to address the program element and layout how the target can be reached over time.

A copy of the overall Level of Service Analysis is provided in **Appendix E**.

6.2.1 Level of Service Background

A program's LOS is typically comprised of system performance objectives and/or a minimum standard for system condition and is often defined in terms of frequency of service. For example, pipe replacement activities are currently limited by the availability of Public Works personnel. As the Public Works Department is responsible for providing services other than those related to stormwater (i.e., tree removal, repaving, snow removal), setting and achieving annual replacement goals can be difficult. Public Works staff are directed, often on a daily basis, to address the immediate needs of the community. Thus, the amount of the existing system which can be replaced during a given year will be highly impacted by the availability of resources, both staff time and funding. Under an expanded program, the LOS could be defined by the goal of replacing 1% of the existing system annually (e.g. a 100-year replacement cycle). The cost associated with this LOS would be defined by the resources required to achieve this goal (e.g. staff time, materials costs, equipment costs, etc.). If the Township desires to replace the system on a faster cycle, for example in 50 years, both the effort and associated costs would generally double.

6.2.2 Level of Service Analysis Exercise

6.2.2.1 Approach

To plan for program expansion, it is necessary to gather information and feedback on key priorities to begin moving the program in a direction that reflects the needs of South Fayette Township. To accomplish this a high, medium and low LOS option was developed to address each program gap. Township staff and members of the SNAC were then asked to provide their preferences and feedback on LOS options intended to address each of program gaps identified in the previous section of this report and as summarized in the table below. Staff and the SNAC were asked to consider which LOS option they felt

best addressed the Township needs at a level they could generally support. Based on the results of this exercise and further consultation with staff, a recommended target LOS for each program gap was then identified. The complete results of this analysis are provided in **Appendix E.**

Table 4 – LOS Analysis Program Gaps

COST CENTER	PROGRAM ELEMENT
Capital Projects, Equipment & System Replacement	Storm Sewer Replacement
	New and Replacement Equipment
	Water Quality Projects
Infrastructure Operations & Maintenance	Stormwater Conveyance System Cleaning & Repairs
	Culvert & Channel Maintenance
	Maintenance Planning
	Private Stormwater Management Facility Support
Engineering, Compliance & Asset Management	MS4 Permit Compliance Support
	Existing Conditions Assessments
	System Mapping & Asset Management
	Stormwater Facility Inspections
	Engineering Design
	Ordinance & Construction Standards Development & Updates
	Watershed Planning Support

6.2.2.2 Results

The overall responses to the LOS exercise from both the SNAC and Township staff LOS responses support an increase in all of the identified program areas. When ranked based upon the overall response, the following list of priorities emerges:

Table 5 – LOS Ranking

Rank by LOS Selection
System Mapping & Asset Management
Ordinance & Construction Standards Development & Updates
Maintenance Planning
Existing Conditions Assessments
Culvert & Channel Maintenance
Stormwater Facility Inspections
New and Replacement Equipment
Stormwater Conveyance System Cleaning & Repairs
MS4 Permit Compliance Support
Watershed Planning Support
Private Stormwater Management Facility Support
Engineering Design
Storm Sewer Replacement
Water Quality Projects

Key comments/thoughts from staff and the SNAC included:

- Develop a better understanding of current system conditions through system mapping and assessments prior to making decisions and undertaking larger scale system replacement.
- Create a centralized database of stormwater system information to aid in the decision making process.
- Establish a maintenance plan to direct resources effectively.
- In the meantime, don't "make things worse." Continue operation and maintenance activities at a reasonable level until a more informed decision on resources needs can be made. Focus repairs and replacement on known problem areas until more information is available.
- Where possible, leverage grant funding and partner organizations (e.g. the South Fayette Conservancy Group) to help further water quality improvements and public education efforts.
- The desired level of service for each of the program elements will change over time pending the results of the system evaluations.

Timing

In terms of timing, the LOS results would suggest that the first years of the initial program be focused on assessing the current system conditions. Once this information is obtained, the resources needed to maintain and systematically replace the system can be establishing based upon prioritized cleaning, repair and replacement needs. Until that time, general replacement and cleaning activities would focus on the existing problem areas at a slightly higher level than currently provided.

In addition, the following one-time efforts, are recommended for immediate action to create a foundation upon which to build future program activities and direct resources:

- Complete the stormwater system mapping
- Establish an updated MS4 Program Plan
- Update local stormwater management ordinances and design standards
- Implement a routine maintenance plan

Financial Impact

The recommended changes in levels of service represent nearly 3-fold increase when compared to estimated 2014 stormwater program costs. Other Pennsylvania communities that have evaluated their stormwater programs have identified a similar need to increase their programs by as much as 2 to 4 times their current budget.

An enhanced LOS will not occur overnight. Expansion of a community's stormwater program to meet a desired LOS typically takes place over several years. The program plan recommendation, discussed in the next section, builds upon the existing program of services, taking into account project timing, staff availability, and capital priorities.

7.0 PROGRAM PLAN

Building upon the LOS analysis and the program priorities, the Draft 10-Year Stormwater Program Plan as provided in **Appendix F** lays out a path to reach the target LOS for each program element. The planning horizon is presented to show the financial impacts of adjusting the stormwater program over a 10-year planning period and to identify those program activities which may need to be pursued following the

initial years of an updated stormwater program. Each element is accompanied by the target LOS and notes regarding the anticipated implementation over the first ten years of the updated stormwater program.

When considering the recommended stormwater program updates, the following should be considered:

- The stormwater system isn't a closed system – weather events can heavily influence needs.
- South Fayette is an actively growing community:
    - This creates the opportunity to partner with developers to address existing issues.
    - This can also pull Township resources away from maintaining the current system – focusing attention on new development/infrastructure; and
- Stormwater is multi-dimensional, meaning there is no silver bullet to fix and optimize the existing system. The Township likely needs both more information and resources to address existing issues and maintain the system long-term.
- The Township will still need to deal with local problem areas as they arise.

7.1 Cost and Timing Assumptions

Costs - The following assumptions should be noted with regard to the program costs presented in the plan:

- The activities and costs associated with each program element relate to the LOS Options detailed in **Appendix E**.
- For the majority of the program elements, each activity will eventually reach the preferred LOS option as noted above. Some costs will fluctuate based on preliminary implementation timing projections.
- The estimated costs for the enhanced LOS are based upon anticipated effort by Township staff, support by outside consultants or contractors, as well as construction and capital costs associated with specific activities, as applicable.
- Costs do not account for inflation.
- The costs noted in the tables present the anticipated funds needed to support implementation of the stormwater program.

Timing - the following should be noted with regard to the timing of the program adjustments as presented in the program plan:

- At a minimum, the existing LOS (if applicable) for each program element will be maintained until change can occur to move toward the targeted LOS.
- Some Program Elements fluctuate from year to year based on the community's priorities, available information, and internal capacity.
- The early years of the program direct more resources to inventorying and assessing the existing systems prior to implementing larger scale replacement activities.
- In general program activities are sequenced based upon logical sequences and planned activities.
    - For example, system mapping and conditions assessment are performed before more robust maintenance and replacement activities are undertaken.
    - Program Elements, such as Storm Sewer Infrastructure Replacement, do not fully ramp up to their preferred LOS until Year 7, which enables the Township to perform system inspection and assessments ahead of additional infrastructure replacement activities.

7.2 10-Year Plan Overview

The future program plan might be best described in terms of its overall focus and priorities, which can be broken down as follows:

Table 6 – Future Program Plan Priorities

Years	Focus	Priorities
1 to 5	**Understanding the System**	4. Learn all that we can about the system: • Extent of the systems • Ownership • Current conditions • What investment is needed 5. Build an asset management system / database 6. Maintain the current program with some additional investment in key areas to maintain a consistent baseline of service. At a minimum provide a basic LOS for all elements.
6 to 10	**Implementing the Optimized Program**	4. As the system inventory is completed, identify the required resources to achieve the goal of fully mature program - proactively managed and well maintained. 5. Ramp up resources needed to meet the refined program needs. 6. By Year 10, achieve targeted LOS for each program element.

Another way to summarize the overall goal of the 10-year program plan would be to move the Township from what could be described as a reactive, unplanned, under-resourced and emergency oriented program to a proactive, planned, supported and scripted program meeting the needs of the Township now and into the future.

The overall estimated level of investment does represent an increase from the current level of spending for South Fayette. **Table 9** presents the estimated program costs for the current program, and the average annual costs for the future program for the first and second 5-year periods.

Table 9 – Total Average Annual Funding

#	COST CENTER	Current LOS	Total Avg. Cost Years 1 to 5	Total Avg. Cost Years 6 to 10
1	Program Administration	$5,000	$65,000	$65,000
2	Infrastructure Operation & Maintenance	$241,000	$405,000	$538,000
3	Engineering, Compliance & Asset Management	$47,000	$276,000	$218,000
4	Capital Projects, Equipment & System Replacement*	$48,000	$281,000	$400,000
	TOTAL	**$341,000**	**$1,027,000**	**$1,221,000**

8.0 SUMMARY

Overall the process has identified a need to increase the support for the Township's stormwater management program now and into the future. The recommended level of funding would suggest the township may need triple the available program budget in the next 10 years to provide the necessary resources to meet the target level of service recommended by staff and the SNAC.

While the program plan may not address all of the Township's future stormwater issues, it would make strides in moving the current program from a reactive program to one that is deliberate and planned, making better use of available funding and targeting investment where it is most needed. The plan would also help in positioning South Fayette for the future, providing leadership and staff the opportunity to maximize the community's investment in existing stormwater infrastructure while putting into place the necessary information, staffing and resources needed to allow for continued growth.

9.0 NEXT STEPS

In terms of immediate next steps, the following should be considered:

- As the Township prepares the budget for the next fiscal year, can funding be made available within the Township's existing resources to support the recommended program adjustments?
    - If full funding isn't available, what level of service can the Township support?
- If the Township's available funding cannot support program adjustments, is a separate funding something that should be considered and/or further evaluated?
    - If so, how quickly would leadership like to have information made available upon which they could base a decision?
    - What background information or policy recommendations would leadership like to evaluate first?
- Community outreach and education is often critical in supporting changes in stormwater programs and funding availability. Is public education needed to build understanding at this time?
- The Township may want to identify local communities with whom they could partner to pursue watershed based planning and capital improvement projects. Are there local partners that might be interested in pursuing change jointly?

Appendix A Current Services Report

South Fayette Township

Stormwater Needs Assessment

Draft - Current Stormwater Services Report

April 17, 2015

A. PURPOSE

The purpose of the Current Services report is to provide an overview of South Fayette Township's existing stormwater program, including a summary of current Township responsibilities, services and costs related to stormwater activities. By understanding the current state of the stormwater program, the Township and stakeholders will be able to make informed decisions about how to develop a program that best meets infrastructure needs within the community.

B. TOWNSHIP SETTING

South Fayette Township, established in 1842, is a fast-growing community in Allegheny County, Pennsylvania, located about 17 miles southwest of Pittsburgh and 15 miles from Pittsburgh International Airport. According to the US Census Bureau, the Township had a population of 14,416 in 2010—an increase of more than 48 percent since 1980.

The Township covers a total area of approximately 20.95 square miles. The topography of the Township is mostly wooded with small hills and floodplains draining to four main streams. The major land uses are residential (25% of total land area), agricultural (24%), and industrial (6%) with smaller percentages of institutional uses (schools, municipal operations), open space, right-of-way, and vacant/wooded lots.

The Township consists of seven watersheds, all of which eventually discharge to the Chartiers Creek and ultimately into the Ohio River. The watersheds include:

- Chartiers Creek
- Coal Run
- Dolphin Run
- Fishing Run
- Millers Run
- Thoms Run
- Robinson Run

All of the main streams are considered impaired, meaning they do not meet designated water quality criteria. Multiple impairments exist throughout the watershed including those related to acid mine drainage, nutrients, PCBs, and sediment.

C. SOUTH FAYETTE 'S CURRENT STORMWATER MANAGEMENT PROGRAM

Stormwater management services in South Fayette are primarily handled by staff from two departments: Planning and Engineering and Public Works.

The Planning & Engineering staff are responsible for planning, zoning, subdivisions, land development and other issues including stormwater infrastructure design standards and capital project oversight, floodplain management, system inventories and mapping, and compliance with the Township's Federal Clean Water Act Municipal Separate Storm Sewer System (MS4) permit. Staff work closely with the Planning Commission and the Environmental Advisory Council on development and infrastructure issues. General township operation and maintenance activities along with infrastructure projects are

coordinated with the Public Works Department on a routine basis. Currently the Planning & Engineering Department consists of the Township Engineer (who also acts as the Zoning Officer) and one administrative assistant (who also supports Building and Code Enforcement services). An engineering consultant provides review of all projects for compliance with the Township subdivision and land development ordinance (SALDO).

The Director of Planning and Engineering also oversees the Building and Code Enforcement staff, who handle building and zoning code enforcement, building inspections and permits, and construction issues such as coordination of erosion and sediment controls and installation of stormwater management facilities. The department issues permits for the building of common residential and commercial structures. Staff includes one full time Code Enforcement officer and one part-time assistant Code Enforcement officer.

Public Works provides services essential to the maintenance of parks, roads, buildings and other township-owned property and facilities including stormwater infrastructure. Some of the crew's stormwater related activities include:

- Storm sewer inspection and maintenance
- Catch basin cleaning and repairs
- Storm sewer repairs and minor replacement projects
- Street sweeping
- Pre and Post storm response
- Roadside ditch maintenance

Public Works includes a management team consisting of a director, a superintendent, and a foreman. The union labor workforce of 13 includes heavy equipment operators, full-time mechanics, and laborers / truck drivers. The department is on call 24 hours a day, 365 days a year.

The **Municipal Authority Township of South Fayette** (MATSF) also provides support to the Township in two primary ways: 1) Geographic Information Systems (GIS) Consultant Support and 2) Televideoing Services. MATSF contracts with a third party GIS Consultant and via agreement with the Township, the consultant also provides GIS mapping and inventory services including storm sewer system mapping support. MATSF provides televideoing services to the Township, aiding in the inspection prior to the dedication of public infrastructure to the Township. Televideoing services are charged to the developer of the subject project and handled via the associated escrow account. From time to time, MATSF shares equipment with the Township Public Works Department.

D. CURRENT PROGRAM DATA COLLECTION

Through a series of interviews and a review of existing source documents, such as budgets, employee time sheets and existing ordinances, information was collected from Township staff to develop a snapshot of South Fayette's current stormwater program. To gather this information, interviews were specifically held in January 2015 with the Township Manager, Township Engineer/Zoning Officer, Public Works Director and Superintendent, Finance Director, Community Development Director, as well as a representative from the Municipal Authority. These interviews, and associated document research, captured data on the current stormwater program, stormwater-related problem areas and complaints, and current stormwater expenditures.

This following section presents a summary of how stormwater related programs and activities are conducted across the Township.

E. TOWNSHIP ORGANIZATION

The overall hierarchy of Township personnel that perform stormwater management services is provided in **Figure 1** followed by a brief description of stormwater management functions by department in **Table 1**. **Table 2** presents the stormwater services provided by partnering agencies outside of the Township structure.

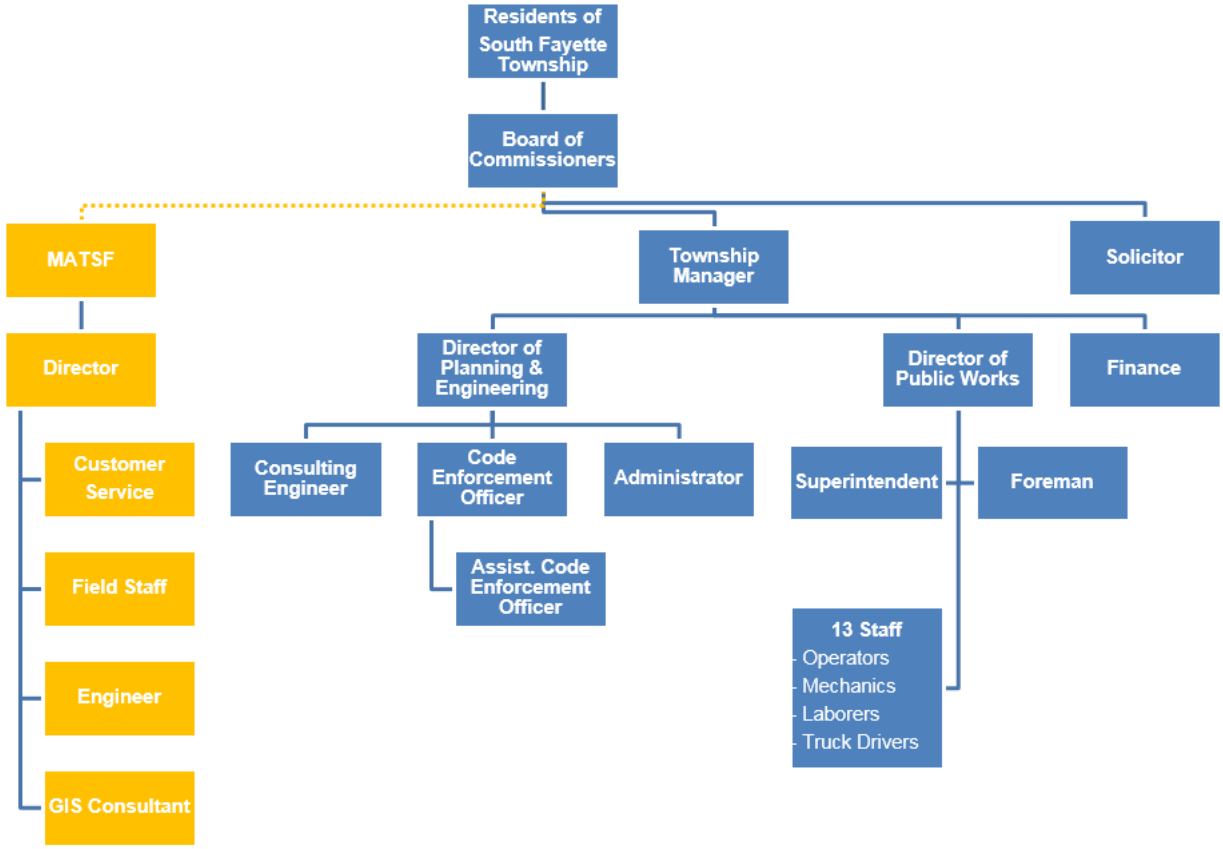

Figure 1 - South Fayette Stormwater Organizational Chart

Table 1 - South Fayette Township Stormwater Functions

Township Office	Functions
Township Manager	Coordinates overall Township operations and services including oversight and planning for Township stormwater management activities and capital improvements. Responsible for coordinating annual budget and managing staff.
Director of Planning & Engineering	Responsible for the enforcement of the Township's land development, zoning ordinances and flood plain management ordinances. Coordinates updates as needed. Acts as the liaison on the County's Stormwater Management planning efforts and the Township's Environmental Advisory Committee (EAC). Coordinates response to property owner stormwater-related complaints. Manages the Township's GIS system and mapping activities. Coordinates the design and construction of capital improvement projects. Responsible for MS4 Permit Compliance activities and reporting. Responsible for managing permitting, plan review and inspection services performed by the Consulting Engineer, Pubic Works personnel, Code Enforcement Officer, and Assistant Code Enforcement Officer. The services for which the Director of Planning and Engineering provides oversight include: • Review and processing of development stormwater management plans • Planning and Engineering studies • Stormwater conveyance facility inspections • Construction inspections The Director also handles contract procurement, payment and invoicing for all service and Township capital projects.
Consulting Engineer	A contracted position, the consulting engineer provides review of subdivision and land development plans including review of stormwater management and erosion and sediment control plans.
Code Enforcement Officer and Assistant Code Enforcement Officer	Assist the Director of Planning and Engineering in providing services related to GIS mapping, site inspections, and land development plan review. Respond to property owners stormwater-related complaints.
Finance Director	Responsible for overall accounting, reporting and management of financial affairs including accounting, budgeting, procurement, debt service, payroll and billing. Note: collection of Township taxes and fees are provided by third party vendors.
Department of Public Works	Performs Township stormwater services and activities including: • Storm sewer inspection and maintenance • Catch basin cleaning and repairs • Storm sewer repairs and minor replacement projects • Street sweeping • Pre and Post storm response • Roadside ditch maintenance Maintains fleet vehicles as well as township facilities including material storage areas. The Public Works Director and Superintendent assist the Director of Planning & Engineering in responding to property owner stormwater related complaints. The Public Works Director and Superintendent oversee and manage all maintenance contracts.
Municipal Authority Township of South Fayette	MATSF provides support services including: GIS Consultant Services and Televideoing support. MATSF also provides equipment (i.e. mini-excavator) to the Township Public Works Department.
Solicitor	Provides overall legal support to the Township.
Environmental Advisory Council	The EAC is a 5-member volunteer committee appointed by the BOC. The EAC supports stormwater related activities in a variety of ways, by pursuing and assisting with stream habitat rehabilitation projects, review of development plans related to environmental concerns and pursuit of grant and funding opportunities.

Table 2 - Other Stormwater-Related Agencies

Outside Agencies	Functions
Pennsylvania Department of Transportation (PennDOT)	• Owns, operates and maintains storm sewer inlets, piping and conveyance located within State roads and right-of-way.
Allegheny County	• Owns, operates and maintains storm sewer inlets, piping and conveyance located within County roads and right-of-way.
Pennsylvania Department of Environmental Protection (PADEP)	• Administers National Pollution Discharge Elimination System (NPDES) Permit Program as delegated to the Commonwealth by US EPA • Administers Dam Safety and Waterway Management Permitting, including wetland and stream encroachment permitting
Allegheny County Conservation District (ACCD)	• Responsible for: o Review of erosion and sediment control plans > 1 acre o Construction inspection (erosion and sediment control only) o Erosion and sediment pollution complaint response o Water quality protection/assistance to agricultural land owners o Water Resources Education Grant administration to feature the benefits of existing rain gardens and water friendly practices, as well as provide additional resources to municipal officials and staff to encourage the development and installation of innovative stormwater management practices in their own municipalities
Chartiers Valley District Flood Authority	• Maintains the James G. Fulton Flood Protection Project on Chartiers Creek, which widened, deepened and realigned portions of the Chartiers Creek in order to minimize flooding. • The Flood Authority maintains the improvement project and also aims to preserve natural features and floodplains by providing oversight of development which may encroach upon Chartiers Creek. Note: The township contributes funding annually to the Flood Authority to support the ongoing maintenance of the flood protection project.
Char-West Council of Governments (Char-West COG)	• Provides materials and equipment purchasing opportunities via purchasing alliance agreement. • The COG owns a Vactor Truck, which is available as a rental to members.

F. CURRENT STORMWATER INVENTORY INFORMATION

Based upon GIS data and figures provided by Township Staff, the inventory of current stormwater infrastructure and related assets are estimated as follows:

- 65 total miles of Township roads and an additional 15 miles of State roads, maintained by the Township via contractual agreement with PennDOT;
- 1918 catch basins;
- 170 manholes;
- 26.3 miles of stormwater pipe;
- Over 110 outfalls; and
- 1 detention basin.

Note:

- The figures provided above are based upon GIS inventory of the existing Township system. Township Staff estimate that 2/3rds of the Township's stormwater infrastructure has been inventoried to date. The remainder of mapping is schedule to be completed during the summer of 2015. The figures above will be updated as more information becomes available.
    - Staff estimate that the figures associated with the inventory of stormwater related assets will likely an increase by 20% following the completion of the mapping effort. Estimated figures are as follows:

- 2300 catch basins;
- 204 manholes;
- 31.6 miles of stormwater pipe; and
- 132 outfalls.

- The majority of the Township's pipe, approximately 16 miles, is corrugated metal which has an anticipated design life of roughly 30-40 years. Staff estimate that of the corrugated metal pipe, the majority is between 25-30 years old. The actual service life is highly dependent on watershed conditions, runoff characteristics such as pH and maintenance and cleaning activities.
- The Township currently owns and maintains one detention basin, located in Fairview Park. The remaining stormwater basins or other best management practices (BMPs) located throughout the township, are maintained by private property owners and/or home-owners associations. Township staff are in the process of verifying ownership of several basins within the Township.

G. CURRENT STORMWATER ACTIVITIES

The first step in evaluating the current stormwater program is to define the current level of service being provided. This baseline information will then be used to assess the Township's existing program and to identify needs and gaps. The current stormwater program information is organized under four Major Service and Cost Centers:

1. Program Administration
2. Infrastructure Operations and Maintenance
3. Engineering, Compliance and Asset Management
4. Capital Projects, Equipment and System Replacement

By organizing South Fayette's services and costs by major category, it will help demonstrate how the Township's stormwater program is organized and how funds are expended. Having this overview of all existing services and the corresponding level of effort is critical to understanding:

- **How** services are currently delivered to the community;
- **Who** is providing them;
- **What are the associated required resources**; and
- **What are the known and perceived needs**.

1. Program Administration

The Township provides coordination and planning for Township stormwater management activities and capital improvements.

- **Annual Budgeting** - The Township develops annual budgets for both operational and capital needs. Each Department head is responsible for developing their requested budget for materials, equipment, and services. The Township Manager is responsible for requesting funds for capital projects. The Board of Commissioners (BOS) has final budget approval, including stormwater related expenditures.
- **Accounting/Cost Tracking** - The Township Finance Director oversees accounting of all Township activities and supports the Township auditing process.
  - The Township Finance Director conducts the administrative activities associated with stormwater services (human resources/personnel staffing, purchasing, procurement payroll, etc.).
  - Note: personnel time related to stormwater management activities is not currently tracked separately. A budgetary line item for materials is included in the Township's annual budget. In FY2014, this budget was $28.6K and actual expenditures were $48K.
- **Contracts and Procurement** – The Director of Planning and Engineering is responsible for the administration of all stormwater related services provided by outside contractors including engineering, construction, maintenance and consultant services. The Finance Director assists in

administering contracts and processing payments.

- **Grant Funding** - The Director of Planning and Engineering coordinates the pursuit of state and federal grant opportunities with support from the EAC
- **Advisory Committee Support** - The Director of Planning and Engineering serves as a staff liaison to the Township's Environmental Advisory Committee.

2. Infrastructure Operations and Maintenance

The Township performs the following operation and maintenance activities to maintain the structure and function of the stormwater conveyance system.

- **Operations and Maintenance Scheduling –** The Township does not have a routine inspection or asset management plan in place. The Director of Planning and Engineering, the Public Works Director and Superintendent meet weekly to coordinate Township activities.
- **Catch Basin Cleaning–** Catch basin cleaning was done in 2013 in coordination with stormwater system mapping efforts. Grates are pulled, cleaned and GPS located.
    - This required a four man crew plus an intern (operating the GPS and taking field measurements unit) to complete.
    - Approximately 2/3rds of the Township stormwater system, including catch basins, conveyance pipes and outfalls, has been completed. Township staff estimate another 400 man-hours will be required to complete the work (planned for summer 2015).
- **Ditches –** Limited ditch maintenance is performed throughout the Township.
    - This is generally done on an as-needed basis. Staff estimate ditches may be cleared once every 2 years. Staff utilize a backhoe to clear out problem areas and restore grades.
    - Ditches within the Township right-of-way are mowed on a routine basis.
- **Detention Pond Maintenance** – The Township maintains one stormwater management basin. Typically activities include mowing and outlet pipe clearing/cleaning.
- **Private Infrastructure Assistance** – Through cost sharing agreements, the Township has assisted private property owners in addressing drainage issues when runoff from Township roads and facilities is involved.
    - For example, in 2014, the Township assisted two property owners in the Lakemont neighborhood. A public park just upstream of the subject properties drains to the Township stormwater system.
        - Localized regrading forced runoff onto one of the properties, resulting in minor flooding and damage to the structure. The Township devised an extension of the existing stormwater system to capture and convey water between the two properties.
        - While a private property issue, in this instance a cost sharing agreement was established. The private property owners were responsible for the purchase of materials (approximately $6K) and the Township provided labor for the installation of the system (approximately $6K).
        - The property owners will be responsible for maintaining grading and vegetation. The township will maintain the pipe and received an access easement from the property owners' to enter the site.
- **Street Sweeping** - The Township operates 2 street sweepers full-time for 4 to 6 weeks each spring and fall. Materials are disposed of at designated in-house facilities located on Township property.
- **Pre-Storm Inlet and Culvert Cleaning** – Prior to major forecasted rain events, staff clean inlet grates, culverts and ditches system wide. These preventative actions are critical to maintaining open conveyance structures that may have reduced capacity from sediment, leaves, or debris.
    - This activity typically requires 75% of the public works staff one full day in the field to complete for each storm event.

- Staff estimate that pre-storm activities were required approximately 10 times in 2014.

- **Road Closures and Barricades** - The staff erects barricades around intersections and travel lanes that are flooded due to rising streams and blocked pipes. This typically includes the following roads:
  - Millers Run & Sygan Road
  - Sygan Road & 2nd Avenue
  - Sygan Road and Vernon Road
  - Millers Run Road & 978/Battle Bridge Road
  - Millers Run & Union Avenue
- **Post-Storm/ Emergency Clean-Up** - After large storms the Township performs post- flood clean-up duties, including street sweeping, debris removal, additional culvert cleaning, and additional trash pick-ups. The overall effort associated with storm clean-up varies with the severity of the rainfall event.
- **Emergency Response –** Staff support emergency response to localized flooding issues. This activity is covered by general funds, as needed. No significant flooding events occurred in 2014.
- **Clearing and Dredging** – Following storm events the potential for significant siltation, sedimentation and debris build up within local streams and waterways may occur, particularly at culverts and bridge crossings.
  - The Township does not currently do any routine clearing or dredging of local bridges and culverts. This is performed on an as needed/emergency basis for Township bridges and culverts.
- **Vehicle Maintenance -** The Public Works' Mechanics perform maintenance on all Township vehicles including those used in stormwater related activities including Township work trucks, street sweepers, trailers, etc.
  - Staff estimate that the street sweepers require 1-2 weeks of maintenance each year, requiring 2 mechanics. Staff purchase approximately $3,500 in parts annually (brushes, rubber gaskets, etc.) for repair and replacement due to routine wear and tear. Repairs are performed in house.
  - Staff also maintain other vehicles such as the backhoe, high-lift, skid steer and dump trucks, which are also utilize in stormwater related activities.

3. Engineering, Compliance and Asset Management & Engineering Support

- **MS4 Permit Compliance -** Under the Federal Clean Water Act (CWA), South Fayette Township is subject to the National Pollution Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit requirements. This permit, administered by PADEP, governs the discharge of pollutants in stormwater runoff from municipal storm sewers. The MS4 permit requires the Township to perform and report on specific tasks associated with the following six Minimum Control Measures (MCMs) which are intended to protect water quality:
  I. Public Education and Outreach
  II. Public Participation and Involvement
  III. Illicit Discharge Detection and Elimination
  IV. Construction Site Stormwater Runoff Control (Erosion Control)
  V. Post-construction Stormwater Management in New Development and Redevelopment
  VI. Pollution Prevention and Good Housekeeping Practices of Municipal Operation and Maintenance

  The Director of Planning and Engineering manages the NPDES compliance activities including the re-application process and annual reporting.
  - The Township is required to provide annual report updates to PADEP on the existing MS4 Permit.
  - System mapping, inspection and public outreach are also ongoing requirements

    - New website and newsletter being prepared to provide additional stormwater management information.
- **Engineering Design –**Design services are typically provided by the Consulting Engineer, however none were required in 2014.
- **Storm System Mapping –** The Director of Planning and Engineering oversees mapping efforts. Interns have typically been utilized to gather system information including location, sizing, materials and conditions assessment. Data is captured via a GPS unit for coordination/consolidation into to the Township GIS database.
    - The Township's GIS consultant, contracted via agreement with the Municipal Authority, assists with maintaining the database. The Township pays for these services via the general fund.
    - The GIS consultant will add stormwater infrastructure from land development plan submissions as infrastructure is constructed.
- **Stormwater-related Inquiries and Complaints** - Property owner issues related to stormwater are generally addressed by the Director of Planning and Engineering, the Public Works Director or Superintendent, based upon staff availability. If the Township personnel cannot address the issue over the phone, site visits are typically performed. Typical citizen complaints related to stormwater issues include street flooding, basement flooding, runoff issues between properties, standing water concerns, and erosion problems.
    - In 2015, the Township initiated a program called "Citizen Request Tracker" intended to centralize complaints and inquiries. Prior to that no centralized complaint tracking was in place. Staff hope to completely transition to the system by the end of the first quarter of 2015. All calls will be logged and responses will be documented. The Director of Planning and Engineering, the Public Works Director or Superintendent will be responsible to responding to any stormwater or flooding issues.
- **Public Infrastructure Inspections** – The Township staff conducts inspection of the drainage system infrastructure as it is constructed and prior to dedication to the Township.
    - Prior to taking ownership, the Township uses MATSF's televideo equipment and staff to inspect underground portions of the system. Findings from inspections may result in remedial repairs prior to the Township acceptance. The cost of this services is typically covered by development/escrow fees.
    - Assessment of inlets were previously performed in conjunction with the Township's system mapping efforts.
    - The Township does not perform routine assessment/inspection of existing stormwater infrastructure. Inspections are done on an as-needed/emergency basis.
- **Private Property Assistance** – The Director of Planning and Engineering reviews requested changes to local private drainage systems, such as those located at Hunting Ridge, to confirm that appropriate downstream conveyance is available. Staff estimate they process 4 to 6 applications per year.
- **Land Development and Stormwater Management Plan Review** – The Township provides services related to land development, including:
    - Guidance to developers and homeowners on required development approvals and applicable stormwater management requirements and regulations.
    - Review of development plans to ensure infrastructure is being designed in compliance with pertinent ordinances including the stormwater management ordinance.
    - Review of grading permit applications.
    - Administration of maintenance agreements for private stormwater BMPs.
    - Stormwater construction inspections (BMPs and Township Infrastructure) and erosion and sediment control inspections.
    - Review results of infiltration/percolation testing for BMP construction.

The Township Solicitor provides general legal support associated with the land development process.

- **Floodplain Management Ordinance Enforcement** - The Township provides initial review of development activities within the FEMA floodplain and is responsible for enforcing the floodplain management ordinance.
- **Ordinance and Construction Standards Development and Updates** - As new ordinance requirements are identified based on State and Federal regulations, the Solicitor is responsible for developing draft ordinance language for review and approval by the BOC. Township staff provides input on potential ordinance needs and revisions.
    - The Township is currently in the process of updating their roadway construction standards via a cooperative agreement with surrounding municipalities. The Consulting Engineer is providing these services and costs are being split across the participating communities.

4. Capital Projects, Equipment & System Replacement

Other than small sections of in-kind storm sewer replacement, the Township has not taken on any new capital projects related to stormwater management in the past 5 years. While there are is no current capital stormwater program, any engineering needs or capital contracts would be managed by the Director of Planning and Engineering. The Township Manager, Director of Planning and Engineering, and Public Works Director are responsible for developing the list of prioritized capital improvement projects. The BOC has the final decision of project prioritization and planning.

- **System Replacement and Repairs**
    - Public Works Staff deal with small scale drainage issues – replacing a few hundred feet of pipe at a time, regrading and installing new inlets, headwall and outfall structures.
    - Inlet repairs are typically done in coordination with other infrastructure replacement (i.e. gas, sewer and water) and Township paving projects.
        - The Township replaced 56 inlets in 2013 and 11 in 2014.
        - Inlet replacement requires a two-man crew for excavation and repair and a 2 man crew for pipe repairs and repaving.
        - Staff estimate 5 inlets can be repaired in 3 days within an additional day required for paving.
        - Over the past 5 years, the cost of inlet replacement has risen from $275-300/inlet to $600/inlet due to the increasing cost of concrete.
    - Staff have noted the need for more routine and planned replacement.
- **Materials Purchasing** – Public Works expended $48k for materials in 2014, which are purchased utilizing Char-West Council of Governments (COG) pricing. Staff typically stockpile about 500 LF of 15”D pipe annually. Other materials include stone, backfill, bricks, etc. Note: The materials budget of $28.6k was exceeded in 2014. 2015 is budgeted at $30k. Staff anticipate additional funding will be necessary to maintain normal/current activities.
- **Equipment Purchases -** The Township owns and maintains the various equipment that is used for in conjunction with stormwater operation and maintenance activities. The Township purchased a used street sweeper in 2014 for $40k. Staff anticipate that the 2nd street sweeper may need to be replaced soon.

The following is list of Township owned equipment and vehicles utilized in support of stormwater management activities. **Table 3** includes the year the item was purchased and its estimated replacement cost. Total replacement cost of this equipment is estimated at $1.46M. Vehicles are used in support of multiple Township operation, maintenance and construction activities. Costs are not proportioned for stormwater only activities. There is currently no dedicated equipment replacement fund.

Table 3 – Township Vehicles and Equipment Used for Stormwater Activities

Vehicle #	YEAR	AGE	MAKE	REPLACEMENT COSTS
Truck 3	2003	9	Ford F-550 Dump	$80,000.00
Truck 9	2006	9	International 7300 Dump	$145,000.00
Truck 10	2007	8	Ford F-550 Dump	$80,000.00
Truck 22	2005	10	Chevrolet Silverado P/U	$40,000.00
Equipment	1996	19	Elgin (Series P Sweeper)	$185,000.00
Equipment	2007	8	Massey Ferguson 5445	$115,000.00
Truck 20	1995	20	Ford F-450 (Utility)	$45,000.00
Truck 24	2001	14	Ford F-550 Dump	$80,000.00
Truck 25	2000	15	Sterling (Johnston Sweeper)	$265,000.00
Equipment	2000	15	New Holland LS-180	$70,000.00
Equipment	2004	11	Case Backhoe 580 M	$125,000.00
Equipment	2003	12	Cat Loader 924 GZ	$225,000.00

H. CURRENT COST OF SERVICE

A single line item for Stormwater Maintenance Materials in the 2015 budget presents South Fayette's dedicated budget for stormwater management activities. This line item only presents materials (i.e., catch basin risers, pipe, stone, etc.) and does not incorporate staff time. Personnel time related to stormwater activities is currently included in the budgets for the respective Township Departments (e.g. Planning and Engineering, Public Works, etc.). **Table 4** presents the fluctuation of annual expenditures for materials and contract services associated with the Stormwater Maintenance Materials line item from 2012 to 2014, and the budgeted amount approved for 2015.

Table 4 - Storm Sewers & Drains Expenditures (2012 - 2015)

YEAR	ACTUAL
2012	$21,265
2013	$7,543
2014	$48,000
2015*	$30,000

*budgeted

To understand the full cost of stormwater management, both the direct and indirect costs associated with each Major Service and Cost Center were identified. This included the costs of all personnel that are engaged in maintaining and managing stormwater activities, as well as non-payroll expenses. Specific items covered include:

- Equipment purchases,
- Equipment maintenance and usage,
- Training and education,
- Non-personnel maintenance and operation costs,
- Materials costs, and
- Administrative and office costs.

Table 5 shows the estimated 2014 stormwater-related costs based on budget information, awarded contracts, and activity reports maintained by the Township. The Township does not currently itemize staff time associated with stormwater activities; estimates for these costs are based on interviews and discussions with Township staff. As these costs fluctuate from year to year, Table 6 provides a snapshot of the estimated 2014 costs associated with Stormwater related services provided by the Township.

The costs associated with the review of land development plans and grading permits are largely covered by development review/escrow and grading permit review fees and not included in the costs presented below.

Table 5 - 2014 Stormwater Program Costs*

#	COST CENTER	ESTIMATED COST (2014)
1	Program Administration	$5,000
2	Infrastructure Operation & Maintenance	$241,000
3	Engineering, Compliance & Asset Management	$47,000
4	Capital Projects, Equipment & System Replacement**	$88,000
	TOTAL	**$381,000**

*Preliminary Estimate – to be verified.

**There were no planned capital improvements in 2014 – any replacement activities were carried out by the Township Public Works Staff and captured under Cost Center #2 – Infrastructure Operation & Maintenance.

I. PROGRAM NEEDS & GAPS

Following a review and confirmation of the Current Services Report by the Township, a memorandum summarizing gaps, priorities, and preliminary needs for development of the future program plan will be developed. The Township has already identified a list of additional stormwater program services to be considered to better meet the community's needs for flood mitigation, water quality, and infrastructure management. Some of these new or expanded elements include:

- Improve overall MS4 Compliance efforts and documentation.
- Complete mapping of current stormwater infrastructure throughout the Township and complete a conditions assessment of the Township's current assets.
- Expand the Township's infrastructure replacement program to be more proactive.
- Develop a more robust inspection program to help ensure the long term maintenance and performance of both public and private stormwater management BMPs.
- Create a routine operation and maintenance plan for all Township owned stormwater infrastructure.
- Initiate watershed planning efforts to aid the Township in planning for anticipated growth as well as begin to address long-term impairments throughout the Township's seven watersheds.

Appendix B
Drivers and Challenges

South Fayette Township

Stormwater Needs Assessment

Drivers and Challenges

April 17, 2015

South Fayette Township is being confronted with several local drivers that impact the need to reevaluate current and future public stormwater management services – an aging infrastructure, increased development, more intense rain events, and evolving federal and state stormwater regulations. The following section highlights the key challenges and identifies preliminary gaps in the current services that may need to be addressed to meet the stormwater management needs of the community. Proactively dealing with these issues may warrant the expansion of the current stormwater program as well as a change in funding level and/or strategy in order to better meet the needs of the Township now and in the future.

- South Fayette has experienced steady growth since the early 1980s. The Township's 2013 Comprehensive plan notes that there is capacity for an additional 20,000 residents in the future. With continued residential growth, anticipated expansion of commercial and industrial development and the planned Turnpike Extension with the creation of 576 Beltway (aka State Route 576), the Township will need to plan for:
    - New public infrastructure including roads, stormwater conveyance, stormwater best management practices, and new stream crossings that will need to be maintained to provide system capacity to minimize flooding problems and manage runoff and pollutants.
    - New private stormwater management infrastructure, which will need to be monitored and inspected to ensure proper functionality and alleviate potential downstream impacts.
    - An increase in impervious area - requiring the management of additional stormwater runoff and potential pollution in order to protect local water resources.
- The majority of existing stormwater best management practices (BMPs) are currently maintained by private property owners and/or home-owners associations.
    - As property ownership changes, the maintenance responsibilities need to be clearly communicated to ensure on-going proper operation. Without proper communication of owner responsibilities, required maintenance may be delayed or neglected.
    - Without proper maintenance and required repairs, these systems have the potential to impact upstream and downstream property owners alike resulting in flooding, property damage, loss of habitat and pollution of local waterways.
    - The township does not currently perform routine inspection of these systems but since the community relies on the proper functioning of these systems to protect public health and safety, enforcement of maintenance requirements should be addressed.
- Township staff must maintain existing systems and manage previous public investment in stormwater infrastructure.
    - The current stormwater program can be described as reactive. Township staff address needs related to maintenance, repairs and replacement on an as-needed / emergency basis.
    - A large portions of the Township's existing stormwater system is beginning to approach the end of its anticipated service life and will eventually require replacement.

    - The increase in frequency and intensity of rainfall events makes it more critical to maintain system capacity to minimize potential public health and safety hazards.
    - The township does not currently have a routine maintenance, repair or replacement program.
    - Expansion of Township owned and maintained infrastructure will put further pressure on existing resources and funding to properly manage the system.
    - The township will likely need to address long-term maintenance and replacement needs to maintain pace with the growing community.
- State and Federal mandates require the Township to meet the Federal Clean Water Act as part of the Township's Municipal Separate Storm Sewer System (MS4) Permit.
    - Permit requirements continue to evolve and require additional effort at the local level to ensure compliance. Staff require additional clarification on the compliance requirements to ensure they can meet existing and future regulations;
    - Water quality related requirements and regulations are also evolving. Staff anticipate that, similar to other local watersheds such as Saw Mill Run, the Township may need to address the impairments of local water bodies.
- It is the Township's goal to maintain a high-level of service and be able to serve the community while meeting the demands of a growing community. However, limited available resources including personnel and funding negatively impact the Township's ability to address increasing planning, engineering, operation and maintenance needs.
- Township Staff would like to expand the current stormwater program to better meet today's system constraints and regulatory mandates and to allow the Township to plan effectively and efficiently for continued growth without adversely impacting current residents and businesses.

To address these issues the Township is currently evaluating the existing stormwater program to identify service areas which may need to be expanded and activities which will need to be completed. So far, staff have identified the following preliminary objectives:

- Meet mandated regulatory requirements.
- Establish an asset management system to inventory, asses, maintain and replace infrastructure, in a planned and proactive manner.
- Develop an inspection program of both public and private infrastructure to ensure functionality and maximize benefits to the community.
- Prepare for system expansion and Township growth through effective planning.
- Provide dedicated funding and resource to meet the community's stormwater needs.

Appendix C
Priorities & Goals

South Fayette Township

Stormwater Needs Assessment

Draft Program Priorities and Goals

May 12, 2015

As an initial step in developing a future Stormwater Program Plan for South Fayette, a set of priorities and goals is useful in communicating the need for program updates, identifying program gaps and prioritizing service needs. The following draft program priorities are based on discussions with South Fayette staff and the Stormwater Needs Assessment Committee (SNAC) along with a review of current Township stormwater services. These are intended to identify issues and needs that the program should address moving forward.

A set of goals consistent with these priorities was also drafted. These priorities and goals will be reviewed and revisited with Township leadership, staff and stakeholders, and revised or recast as necessary. These statements are intended to articulate the priorities and goals for the long-term stormwater program over a multi-year horizon (i.e. 5-10 years) rather than immediate/emergency based needs.

Draft Township Stormwater Management Program Priorities:

Based upon the stormwater related challenges and drivers facing South Fayette, the Township would like to address these issues via an updated stormwater program**:**

- Maintain and Replace Aging Infrastructure
- Protect Water Quality
- Address Flooding Issues
- Meet Regulatory Compliance Requirements
- Plan for Community Growth

Draft Township Stormwater Management Goals:

- Inventory the existing stormwater infrastructure system, both public and private, to assess the condition and function of structural elements, and determine parties responsible for operations and maintenance.
- Create a proactive and systematic maintenance, repair and upgrade program to address aging infrastructure issues.
- Establish dedicated and sustainable funding for stormwater management activities to support an appropriate ongoing program that addresses the Township's stormwater priorities and long-term needs.
- Enforce local stormwater management requirements and protect local water resources through a planned inspection of Best Management Practices and enforcement operations and maintenance agreements.
- Reduce the threat to public safety and local property from stormwater runoff and flooding by actively working with property owners and the development community to address known problem areas.
- Collaborate with local watershed groups and municipalities to promote water quality protection and projects that address local water quality impairments over time.
- Undertake watershed planning efforts to identify and implement projections that protect water quality, habitat and natural channels by proactively managing flows and pollution while supporting continued community growth.
- Adopt a regulatory compliance program that meets the requirements of the Township's Municipal Separate Storm Sewer System (MS4) Permit.

Appendix D
Program Gaps

South Fayette Township

Stormwater Needs Assessment

Stormwater Program Gaps

May 12, 2015

STORMWATER PROGRAM GAPS

Based upon an evaluation of the Township's current stormwater services and discussions with Township staff, it appears that not all stormwater goals are being met. Through interviews with staff and review of existing documents, Amec Foster Wheeler and Township staff have identified a working list of the current stormwater program's limitations and gaps, organized by the same Cost Centers used in the Current Services Report.

- Infrastructure Operations & Maintenance;
- Engineering, Compliance & Asset Management;
- Capital Projects, Equipment & System Replacement; and
- Program Administration.

These gaps help to identify current program elements that may require an increased level of service, additional staffing support or other resources. Some gaps may require new services be implemented to better meet the needs of the community. Each of these four major areas are discussed here in more detail.

Infrastructure Operations & Maintenance

- **Stormwater Conveyance System Cleaning and Repairs** - Regular cleaning, inspection, and stormwater infrastructure maintenance tasks are not completed on a routine basis. Routine maintenance cannot be performed. When services are provided it is reactive to immediate needs. Most maintenance and repair activities occur in conjunction with Township paving activities. This is primarily due to limited personnel, high workloads and limited funding. By not performing tasks such as minor catch basin repair and line flushing, the existing stormwater conveyance system may not operate at maximum capacity. This can result in system surcharges, nuisance or roadway flooding, development of sinkholes within the cartway, and system deterioration. Additional resources to assist in maintenance and cleaning activities would help to extend the life of the existing system and maintain system capacity. These resources needed include: additional personnel, equipment such as a vacuum truck, contracted services, etc.
- **Culvert and Channel Maintenance** - The Township maintains multiple culverts and channels in the public right-of-way. These culverts and channels can fill with sediment and debris which may contribute to flooding of roads and may threaten public safety and private property. While the Township clears channels that are known problem areas prior to a storm, other areas are addressed in a reactive fashion and only in the event of an emergency. There is no established program or dedicated source of funding for clearing and dredging. More routine dredging, in select areas such as Verner Street or at the confluence of streams throughout the Township, could aid in minimizing flood risks and avoid associated risks. These activities could be handled either by in-house resources or via contracted services.
- **Maintenance Planning** - There is no comprehensive maintenance plan in place to help direct and prioritize maintenance activities. Rather, the Director of Planning and Engineering, the Public Works Director and Public Works Superintendent meet weekly to coordinate Township maintenance activities on an as-needed basis.

- The Department of Public Works staff and the Township Engineer are generally aware of the location of problem areas and areas requiring more frequent maintenance; however, in most instances, this information is not systematically documented.
- A maintenance plan could be linked to Geographic Information System (GIS) software to enable tracking of progress and coordination of activities internally, with the Municipal Authority and with outside entities such as PennDOT.
    - This system could be implemented in conjunction with an Asset Management Plan (see Asset Management Planning and Scheduling in the next section for further discussion).
    - This tracking system could also be useful for tracking complaints on individual properties and linked to the "Citizen Request Tracker" program, which was recently implemented to centralize complaints and inquires.
- A plan could help the Township maximize available staffing and resources by setting measureable goals and further documenting the maintenance needs of the existing system.

- **Private Stormwater Management Facilities –** The Township does not currently perform routine maintenance on private stormwater management facilities. The Township has assisted in addressing maintenance issues in the past, such as maintenance of the Lakemont detention basins in 2014. Maintenance is generally the responsibility of private property owners and/or home-owners associations. Staff noted that the Township may need to consider taking over operation and maintenance of detention basins in the future as most basins are not routinely maintained and most property owners and home owners association do not have the capability / experience to perform major repairs. A program to assess and evaluate these systems is discussed in the next section.

Engineering, Compliance and Asset Management

- **MS4 Permit Compliance –** As noted in the current services report, South Fayette Township is subject to Municipal Separate Storm Sewer System (MS4) permit requirements as administered by the Pennsylvania Department of Environmental Protection (PADEP). There are specific activities associated with the six Minimum Control Measures (MCMs), listed below, that the Township is required to complete within each permit cycle.
    I. Public Education and Outreach
    II. Public Participation and Involvement
    III. Illicit Discharge Detection and Elimination (IDD&E)
    IV. Construction Site Stormwater Runoff Control (Erosion Control)
    V. Post-construction Stormwater Management in New Development and Redevelopment
    VI. Pollution Prevention and Good Housekeeping Practices of Municipal Operation and Maintenance
- **Existing Conditions Assessment** - No dedicated/systematic inspection and assessment plan has been established for stormwater infrastructure.
    - Inspections are currently performed on an emergency/as-needed basis. Current storm sewer inspection activities are further limited by the availability of televideo equipment which is available from the Municipal Authority or via contracted services.
    - Performing a conditions assessment of the storm sewer using televideoing technology would provide the Township with more accurate information on the current conditions

of the existing system and help to prioritize maintenance and replacement activities based upon which locations need immediate action or attention.
    - Upon completion of the system mapping task as described below, the Township will be able to develop a plan to routinely inspect stormwater infrastructure; including both public and private BMPs to evaluate their current condition and performance.
- **System Mapping and Asset Management** – As noted in the current service report, the Township does not have complete mapping of the existing stormwater system and related infrastructure.
    - Township Staff estimate that two-thirds of the Township's stormwater infrastructure has been inventoried to date. An estimated 400 man-hours are needed to complete the system inventory.
    - The existing stormwater infrastructure system mapping is limited or incomplete and does not include a full inventory of locations, materials, condition, dimensions, elevations, access easements, and ownership.
    - The existing mapping does not include all public and private stormwater BMPs. BMPs may need to be field located, current conditions confirmed, and attributes added to the GIS.
    - In addition, the current mapping does not include all the elements, recommended by the PADEP, as part of the system mapping required under the MS4 permit.
    - Complete system mapping could be coupled with assessment management systems to help inventory and maintain more detailed system records. This could be linked to Township maintenance plans, other software applications and GIS based devices to improve efficiency of stormwater activities and the management of the stormwater related assets (as well as other Township infrastructure).

  The Township does not have a plan in place that prioritizes or schedules needed repairs or replacement activities. Using the findings from the Existing Conditions Assessment and the System Mapping activities, the Township could develop an Asset Management Plan that establishes a schedule for completing the highest priority projects. Improved asset management and system mapping will help support general operations and maintenance activities, system upgrade and replacement and help to direct funding to areas which need more immediate attention.
- **Stormwater Facility Inspections** – The Township does not currently perform routine inspection of private or public stormwater management facilities. The Township engineer and/or code inspector perform site inspections during or immediately following construction. These inspections are intended to determine if stormwater infrastructure is installed as designed. Staff have noted the need for a more robust inspection program for critical infrastructure such as stormwater detention basins. However, ongoing inspection is needed to ensure long-term system performance.
    - Township staff recommend establishing a routine inspection program for both public and private stormwater management facilities to monitor performance and identify critical maintenance needs. This could assist the Township in implementing a more proactive maintenance program for public owned and maintained basins, as well as allow improved coordination and engagement with private property owners in support of completing private maintenance activities.
    - Staff have noted that ownership as well as operation and maintenance responsibility for several basins throughout the Township will need to be determined.
    - As part of the inspection program, staff could evaluate whether the facility might be a candidate for future acquisition by the Township, if the owner cannot perform adequate maintenance or if the system poses a potential danger to the community.

- **Engineering Design –** The Township performs limited in-house engineering design. Most design services are typically provided by the Consulting Engineer, however none were required in 2014.
    - If the Township were to implement a routine pipe replacement program or undertake any larger scale capital improvement projects, additional engineering support may be required.
    - For small-scale projects: Design and construction advice is often needed to support small scale construction projects including replacement activities and BMP maintenance to be carried out by Township personnel. Additional engineering support could be used to assist staff in making repairs and address maintenance issues on a more routine basis.
    - For the capital improvement projects: Detailed engineering and design documents will need to be developed for identified projects. For projects selected for construction, bid documents and construction oversight will be required.
- **Ordinance and Construction Standards Development and Updates –** Township staff have expressed a need to improve and create stormwater-related construction standards, beyond those covered by the road construction standards.
- **Watershed Planning Support –** Staff have indicated the need for larger scale watershed planning in order to identify management and infrastructure strategies that address existing flooding and water quality impairments; as well as to respond to continued pressures from ongoing development. Dedicated staff time and/or consulting services could be used to help carry out planning needs.

Capital Projects, Equipment & System Replacement

- **Capital Projects** - Other than small sections of in-kind storm sewer replacement, the Township has not taken on any new capital projects related to stormwater management in at least the past 5 years. The system mapping and conditions assessments activities discussed in the previous sections may identify areas of the Township which may require more immediate or larger scale replacement.
- **Water Quality Projects** – A visual assessment of 3 of Township's 7 watersheds was conducted by the South Fayette Conservation Group in August 2013. The resulting report identifies projects throughout Coal Run, Miller's Run and Robinson run intended to address existing impairments related to acid mine drainage (AMD), stream erosion and sedimentation, bank failures, invasive species and fish habitat improvements. The Township may wish to consider these projects in conjunction with watershed planning efforts, capital projects, system replacement, and in context of the current and future MS4 Permit requirements. The report identifies over $7.1M of projects throughout the Township that could be implemented as part of the future stormwater program. Projects ranges in cost from $25,000 for additional field investigation to $100,000+ for stream restoration and stabilization.
- **Storm Sewer Replacement** - The Township has an estimated 32 miles of stormwater pipe, 2,300 catch basins, 204 manholes and 132 outfalls. Staff estimate that approximately 500 feet of storm sewer pipe was replaced in 2013. There is no dedicated or systematic pipe replacement program established.
    - Pipe replacement activities carried out by the Township Public Works crew is limited to smaller projects due to staff availability. Outside of planned paving activities, replacement is conducted on an emergency or as-needed basis.
    - Some sections of the storm sewer may require engineering review to size the system to meet modern design standards and adequately handle current flows.
    - Planned system replacement could help to maintain the capacity of the current system and minimize major system failures and costs. In addition, dedicated funding could

provide the necessary resources to upgrade the system where necessary and potentially reduce flooding and public safety hazards.

- Based upon an American Water Works Association (AWWA) benchmarking survey, industry standards recommend investing approximately 1% of the value of the stormwater assets in repair or replacement of the infrastructure on an annual basis. For South Fayette, this would equate to roughly 1,700 feet of pipe and at least 23 inlets annually. This is a recommended standard/ideal approach.
    - The level of funding needed to support this level of replacement is not feasible for all communities.
    - The Township may also consider replacement alternatives such as slip lining the pipe system where access is a potential issue or where lining is a more cost effective solution.
- If the Township staff are to carry out additional system replacement additional staff may be required along with increased funding for materials purposes. Alternatively, system replacement could be contracted out via service agreement.

- **New and Replacement Equipment** - There is currently no dedicated fund to routinely replace the estimated $1.46M in equipment utilized in performing stormwater activities. Dedicated equipment replacement funding could help to regularly replace equipment, minimize downtime and provide staff with the equipment needed to perform stormwater related operation and maintenance (O&M) and replacement activities more efficiently.
    - For example, the most heavily used piece of equipment in support of stormwater related O&M activities is the Street Sweeper. The current sweeper is a 1996 model and has an estimate replacement cost of $185,000. This vehicle is currently out of service. Staff estimate repairs will cost approximately $6,000. Given the age of the sweeper, replacement may be a more cost effective approach in the long-term.
    - Planned replacement funding could help to maximize staff productivity and minimize vehicle repair-time. In addition, the cost of ongoing maintenance and repairs should be balanced against vehicle replacement costs. Note – repairs are currently performed by in-house mechanics.

Program Administration

- **Contracts and Procurement** – Depending on the extent of the future program, the Township staff likely do not have enough capacity to oversee an increase in engineering, construction, and other related services.
    - Bidding and procurement services and support will be needed from Township Administrative staff.
    - Capital project will require project management, construction inspection, and support.
    - The Township could address this gap by hiring additional engineering staff, expanding its use of the current contract engineer, or seeking specialty engineering/project oversight services for these contracted activities.

Appendix E
Level of Service Analysis

Level of Service Introduction

When establishing a formal stormwater management program, it's important to define the Township's activities and services as well as the level at which these services are offered across a planned time-horizon. This is often referred to as the level of service (LOS) and sets the foundation for estimating the annual program costs, which will be further developed in the 5-year program plan. Establishing the services and associated costs helps to identify the funding that may be needed to support the program. Anticipated staff time and additional support should also be considered in context of the program plan, along with operation and maintenance activities and capital improvement activities. This approach, which considers the full extent of resources needed to successfully manage stormwater, helps to better estimate and identify the total cost of stormwater related activities.

The following sections identify potential program enhancements to meet current and projected future program needs to address the previously identified gaps within each of the major cost centers as summarized in the table below. The information presented herein is based on a review of available data, interviews with staff, and professional judgment on costs for similar program elements in other Pennsylvania communities.

COST CENTER	PROGRAM ELEMENT
Capital Projects, Equipment & System Replacement	Storm Sewer Replacement
	New and Replacement Equipment
	Water Quality Projects
Infrastructure Operations & Maintenance	Stormwater Conveyance System Cleaning & Repairs
	Culvert & Channel Maintenance
	Maintenance Planning
	Private Stormwater Management Facility Support
Engineering, Compliance & Asset Management	MS4 Permit Compliance Support
	Existing Conditions Assessments
	System Mapping & Asset Management
	Stormwater Facility Inspections
	Engineering Design
	Ordinance & Construction Standards Development & Updates
	Watershed Planning Support

After discussion of each program element, a recommended target level of services based upon feedback from Township staff and the Stormwater Needs Advisory Committee (SNAC) is presented along with key factors and general recommendations on the overall timing of implementation.

Background

A program's LOS is typically comprised of system performance objectives and/or a minimum standard for system condition and is often defined in terms of frequency of service. For example, pipe replacement activities are currently limited by the availability of Public Works personnel. As the Public Works Department is responsible for providing services other than those related to stormwater (i.e., tree removal, repaving, snow removal), setting and achieving annual replacement goals can be difficult. Public Works staff are directed, often on a daily basis, to address the immediate needs of the community. Thus, the amount of the existing system which can be replaced during a given year will be highly impacted by the availability of resources, both staff time and funding. Under an expanded program, the LOS could be defined by the goal of replacing 1% of the existing system annually (e.g. a 100-year replacement cycle). The cost associated with this LOS would be defined by the resources required to achieve this goal (e.g. staff time, materials costs, equipment costs, etc.). If the Township desires to replace the system on a faster cycle, for example in 50 years, both the effort and associated costs would generally double.

LOS can also be defined in terms of quantity of service in cases such as public education. The level can be measured directly by the amount and type of materials provided to the public or the investment in resources to prepare and deliver the materials.

When reviewing the LOS options, consider the following:

- The program elements presented herein assume the Township will continue to provide the services outlined in the Current Services Report at or around their current levels. For example, staff feel that the current street sweeping program is sufficient for community and no adjustments are needed at this time.
- Where applicable, resources for specific program elements are provided to address identified Township gaps/needs. For each program element, a low, medium and high LOS option was developed.
- Program development is incremental. Many levels of service are designed to provide the Township with better information from which to make future decisions. For example, a more thorough conditions assessment of the Township's existing system may reveal that some sections of pipe require immediate replacement, this may impact system replacement prioritization.
- The program items would not all be implemented immediately. The plan would be to phase in these services over time in general accordance with the timing recommendations.
- The costs presented in the table cannot necessarily be added up to determine the annual program costs. The activities need to be spread out over a number of years. This issue will be further addressed in context of the 5-year program plan.
- Cost estimates are order of magnitude and based on typical cost data for the region. At this time, cost estimates are meant to provide a sense of the relative financial commitment involved in order to facilitate the decision-making process. More specific cost data will be presented in context of the resulting program plan.

Level of Service Decision Exercise

Moving to a formalized stormwater management program with defined performance metrics and goals will not occur overnight – rather adjustments to meet a desired LOS typically occurs over a period of years. To plan for program expansion, it is necessary to gather information and feedback on key priorities to begin moving the program in a direction that reflects the needs of South Fayette Township. To accomplish this both Township staff and members of the Stormwater Needs Assessment Committee (SNAC) were asked to provide their preferences and feedback on the LOS options. They were asked to consider which option they felt best addressed the Township needs at a level they could generally support.

The resulting recommendation is presented following the discussion of the LOS Options. The recommendation is accompanied by key factors for implementation and notes on the anticipated timing meant to represent the phasing in of services over time.

LOS Exercise - Summary Results

The following is a brief summary of the Stormwater Needs Advisory Committee's (SNAC) feedback on the Level of Service (LOS) options. The overall results as well the comments provided help to inform the development of a program plan, which is intended to set a vision for stormwater activities and priorities over the next 5 to 10 years. The table below summarizes the target level of service option based upon the average response for each program element. These results recognize that the current LOS should not remain constant but will need to be adjusted overtime.

PROGRAM ELEMENT	TARGET LOS
CAPITAL PROJECTS, EQUIPMENT & SYSTEM REPLACEMENT	
Storm Sewer Replacement	M
New and Replacement Equipment	M
Water Quality Projects	B
INFRASTRUCTURE OPERATIONS & MAINTENANCE	
Stormwater Conveyance System Cleaning & Repairs	M
Culvert & Channel Maintenance	M
Maintenance Planning	M
Private Stormwater Management Facility Support	M
ENGINEERING, COMPLIANCE & ASSET MANAGEMENT	
MS4 Permit Compliance Support	M
Existing Conditions Assessments	M
System Mapping & Asset Management	H
Stormwater Facility Inspections	M
Engineering Design	M
Ordinance & Construction Standards Development & Updates	H
Watershed Planning Support	M

LOS Ranking

While the average LOS responses, support an increase in all of the identified program areas, when ranked based upon the total LOS responses (H=3, M=2, L=1), a different pattern emerges:

Rank by LOS Selection
System Mapping & Asset Management
Ordinance & Construction Standards Development & Updates
Maintenance Planning
Existing Conditions Assessments
Culvert & Channel Maintenance
Stormwater Facility Inspections
New and Replacement Equipment
Stormwater Conveyance System Cleaning & Repairs
MS4 Permit Compliance Support
Watershed Planning Support
Private Stormwater Management Facility Support
Engineering Design
Storm Sewer Replacement
Water Quality Projects

The ranking of services by the overall LOS response provides a general sense of the priorities based upon the SNAC's input. This provides a basis for developing an implementation schedule with the higher ranking elements being address earlier in the program plan. This ranking also echoes a number of comments provided during by the SNAC. The overall feedback was diverse, with each respondent providing a different perspective on what's important, what level of investment is reasonable and when activities should be undertaken. The comments help to set a basis for outlining the program plan. Key comments/thoughts included:

- Develop a better understanding of current system conditions through system mapping and assessments prior to making decisions and undertaking larger scale system replacement.
- Create a centralized database of stormwater system information to aid in the decision making process.
- Establish a maintenance plan to direct resources effectively.
- In the meantime, don't "make things worse." Continue operation and maintenance activities at a reasonable level until a more informed decision on resources needs can be made. Focus repairs and replacement on known problem areas until more information is available.
  Where possible, leverage grant funding and partner organizations (e.g. the South Fayette Conservancy Group) to help further water quality improvements and public education efforts.
- The desired level of service for each of the program elements will change over time pending the results of the system evaluations.

Implementation / Timing

The LOS Exercise results would suggest that the first years of the initial program be focused on assessing the current system conditions. Once this information is obtained, the resources needed to maintain and systematically replace the system can be establishing based upon prioritized cleaning, repair and replacement needs. Until that time, general replacement and cleaning activities will focus on the existing problem areas at a slightly higher level than currently provided.

In addition, the following one-time efforts, would be undertaken during the first year of the program to create a foundation upon which to build future program activities and direct resources:

- Complete the stormwater system mapping
- Establish an updated MS4 Program Plan
- Update local stormwater management ordinances and design standards
- Implement a routine maintenance plan

A summary of the timing recommendations for each program element is presented following the recommended target LOS option.

Cost Center: Capital Projects, Equipment & System Replacement

Service: Storm Sewer Replacement

Current Condition: The Township has an estimated 32 miles of stormwater pipe, 2,300 catch basins, 204 manholes and 132 outfalls.

System replacement is completed on an emergency basis or in conjunction with Township paving projects. Pipe replacement activities are carried out by the Township Public Works crew and limited due to staff availability and budget limitations. In 2013, staff estimate 500 linear feet of storm sewer pipe was replaced.

Need: Predictable replacement of drainage infrastructure on a scheduled basis that maximizes performance of the drainage network and minimizes risk of failure, flood damage, and poor water quality.

Assumptions: Township will establish a routine replacement program. Pipe replacement will be tied closely to the envisioned asset management system and coordinated with system cleaning, mapping and conditions assessment efforts (see Infrastructure Operations & Maintenance Cost Center). Township engineering staff will oversee design and installation. Replacement will be coordinated with other Township or related infrastructure projects when possible. Replacement activities could be prioritized based upon factors such as existing conditions, estimated remaining service life, pipe location, health and safety factors, etc.

Replacement costs range:

- Pipe - $100-$150/LF. Costs cover materials (piping, bedding, pavement restoration, etc.) and labor.
- Inlet replacement costs range: $2,000-3,500/inlet installed.
- Manhole replacement costs range: $4,000-5,000/manhole installed.
- Outfall replacement costs range: $1,500 – 3,000/outfall installed. Does not include outfall protection (i.e. rip-rap, energy dissipaters, etc.). Conditions should be evaluated on a site specific basis.

Level of Service Options:

- ***Basic –*** *Replace 0.25% (~425 LF) of the Township owned system annually.*
- ***Medium –*** *Replace 0.5% (~850 LF) of the Township owned system annually.*
- ***High –*** *Replace 1% (~1,700 LF) of the Township owned system annually.*

Basic	Medium	High
Estimated Annual Budget $66,000 Targeted Annual Replacement: 425 LF of pipe @ $100/LF 6 Inlets @ $2,750/inlet 1 manholes@4,500/manhole 1 outfall @$2,500/outfall	Estimated Annual Budget $125,000 Targeted Annual Replacement: 850 LF of pipe @ $100/LF 12 Inlets @ $2,750/inlet 1 manholes@4,500/manhole 1 outfall @$2,500/outfall	Estimated Annual Budget $245,000 Targeted Annual Replacement: 1,700 LF of pipe @ $100/LF 23 Inlets @ $2,750/inlet 2 manholes@4,500/manhole 1 outfall @$2,500/outfall

LOS Recommendation: Medium

Key Factors: This service would likely be performed via contracted service providers initially.

- System replacement at the High LOS option may be required (Years 5 to 10) following the completion and evaluation of the results from the existing conditions assessment conditions assessment in Year 8.
- Routine system assessment and replacement has not occurred for some time.
- Staff expect a backlog of projects would be identified and prioritized.

Timing:

Year 1 - Township will establish a routine replacement program beginning with the Basic Level of Service Option in Year 1. This matches the replacement performed by Township Staff in 2014.

Year 2-4 - Pipe replacement activities will be ramped up and tied closely to the existing conditions assessment, system cleaning and mapping efforts.

Year 5 – Continue to ramp up services to achieve targeted Medium LOS Option.

Year 6-10 – Based upon the overall results of the conditions assessment the Township would evaluate whether or not additional system replacement (i.e. the High LOS Option) is needed to meet the anticipated replacement backlog. Utilizing a service contractor or conducting replacement in-house would be re-evaluated at this time.

Stormwater Needs Assessment
Level of Service Analysis

Cost Center: Capital Projects, Equipment & System Replacement

Service: New and Replacement Equipment

Current Condition: The Township has an estimated $1.46M in equipment that is routinely used in conjunction with stormwater activities such as operation and maintenance, and pipe replacement. Note –equipment may also be used for other Township purposes. Currently, any new or replacement equipment is purchased on an as-needed basis. There is no dedicated funding or equipment procurement plan.

One of the street sweepers needs to be replaced immediately at an estimated cost of $185,000.

Need: Routine / planned vehicle and equipment replacement that maximizes staff productivity and minimizes vehicle repair-time.

Assumptions: The Township will create a plan to periodically replace vehicles and equipment, creating a long-term and sustainable replacement mechanism. Funds could be allocated in each budget cycle for specific vehicle replacement or a fund could be established to accept a defined amount of dedicated funding on a routine basis.

Calculation of contribution to the fund would be based on percent of time equipment is used for stormwater activities, replacement value, and lifecycle. Township staff would prioritize equipment replacements based upon estimated remaining useful life and Public Works Department needs, both current and proposed.

Level of Service Options:

- ***Basic –*** *Replacement schedule for equipment on a 20-year rotating basis.*
- ***Medium –*** *Replacement schedule for equipment on a 15-year rotating basis.*
- ***High –*** *Replacement schedule for equipment on a 10-year rotating basis.*

Basic	Medium	High
Estimated Annual Contribution $73,000 Target Replacement Cycle: 20 Years	Estimated Annual Contribution $97,400 Target Replacement Cycle: 15 Years	Estimated Annual Contribution $146,000 Target Replacement Cycle: 10 Years

LOS Recommendation: Medium

Key Factors: The Township would need to establish a dedicated equipment replacement fund for stormwater related equipment.

- Some equipment such as the street sweeper require near-term/immediate replacement. Purchases may require additional capital outlays if sufficient funds haven't been accrued early on in the establishment of the fund.
- The target LOS would result in a 15-year replacement cycle.

- The annual contribution could be reduced, by pro-rating the replacement costs to the fund based upon the percentage of time the vehicle/equipment is utilized in stormwater related activities. If this approach is utilized, another funding source (such as the general fund) may need to contribute at the time of purchase.
- If additional equipment, such as a vacuum truck (estimated purchase cost: $310K), is added to the vehicle inventory, additional funds will need to be set aside to plan for future replacement.

Timing:

Year 1 - Township will purchase a replacement street sweeper at an estimated cost of $185K.

Year 2 – Establish equipment replacement fund with initial annual contribution of $97,400. A vehicle replacement schedule will be established.

Year 3-5 - Continue annual contribution of $97,400 to replacement fund.

Year 5+ - Continue annual contributions and re-evaluate equipment replacement prioritization and funding level.

Cost Center: Capital Projects, Equipment & System Replacement

Service: Water Quality Projects

Current Condition: All 7 of the watersheds in the Township have one or more water quality related impairments. South Fayette Conservation Group conducted a visual assessment in August 2013 and identified over $7.1M in potential projects throughout Coal Run, Miller's Run and Robinson Run that would begin to address existing impairments related to acid mine drainage (AMD), stream erosion and sedimentation, bank failures, invasive species and fish habitat, etc.

In the past, the Township has provided Public Works Crews and vehicle support for conservation projects. However, other than volunteer ongoing support provided via the Environmental Advisory Committee (EAC), the Township has not undertaken any of the identified projects or provided outside support for the identified projects on a routine basis. This is primarily due to limited resources – included staff availability and budget to support activities outside of typical day to day operations (see current services report).

Need: Support and implementation of Water Quality Projects throughout the Township to improve local water quality, protect natural resources and aid in on-going compliance efforts.

Assumptions: The Township will evaluate and identify potential projects to support. Assume projects with multiple benefits (water quality, permit compliance, protection of other critical infrastructure, recreation, etc.) are preferred.

- Dedicate Township staff time to project evaluation, grant pursuits and working with the EAC and other partners to pursue projects. Assume 8 hours per month of staff time would be dedicated to supporting these efforts at average $60/hr or approximately $6,000 per year.
- Township would support projects by providing additional resources in terms of personnel time, equipment, materials, or funding.

The Township may wish to pursue projects in conjunction with MS4 compliance activities and in partnership with South Fayette Conservation Group as well as other local watershed and environmental organizations and agencies (e.g. the Conservation District, Department of Conservation and Natural Resources and Department of Environmental Protection, etc.). Grant funding may be available to further support projects. Some restoration and stabilization projects may help protect other infrastructure such as roadways, sanitary sewer collection and water distributions systems. Partnering with other utility providers and infrastructure owners (e.g. MASTF, PennDOT, etc.) may be feasible.

Level of Service Options:

- ***Basic –*** *Provide support for water quality projects up to $25k/year.*
- ***Medium –*** *Provide support for water quality projects up to $50k/year.*
- ***High –*** *Provide support for water quality projects up to $100k/year.*

Basic	Medium	High
Dedicated Staff Time $6,000 Annual Project Support Budget $25,000	Dedicated Staff Time $6,000 Annual Project Support Budget $50,000	Dedicated Staff Time $6,000 Annual Project Support Budget $100,000

LOS Recommendation: Basic

Key Factors:

Future activities for this program element is linked closely to coordination and ongoing work with the EAC and the South Fayette Watershed Conservancy Group.

- Availability of grant funding varies annually and the Township will need to actively pursue opportunities and compete with other municipalities to be awarded grants.
- Water Quality projects should be further evaluated and those which support other activities such as MS4 permit compliance, reduction of localized flooding and overall pollution reduction should be given priority
- The previously performed visual assessments only cover 3 of the Township's 7 watershed. The Township may wish to pursue assessments for the remaining watersheds so that project opportunities are identified across the entire Township.
- If budgeted matching funds are not utilized within a given year, they could be rolled over to the next year and used to pursue large scale projects or redirected to other stormwater program needs. This would be handled as part of the annual budgeting process.

Timing:

Year 1-2 - Township will provide personnel support (budgeted at $6K) to work with the EAC and South Fayette Conservancy Group to help identify, prioritize and pursue grant based funding for water quality projects across the Township.

Year 3+ – Assumes the Township will provide $25K worth of matching funding/in-kind service to support water quality projects annually. Continue to staff support ($6K/annually).

Cost Center: Infrastructure Operation & Maintenance

Service: Stormwater Conveyance System Cleaning and Repairs

Current Condition: Repairs are currently done on an as-needed/emergency basis. When services are provided it is reactive to immediate needs. Most maintenance and repair activities occur in conjunction with Township paving activities. This is primarily due to limited personnel, high workloads and limited funding.

Need: Routine maintenance and repairs program that will help to extend the life of the existing system, maximize performance, minimize unexpected repairs and avoid cost premiums associated with emergency services.

Assumptions: The Public Works Department will maintain current level of service for street sweeping activities and all current drainage related activities. Township staff will develop a maintenance and inspection plan (see Maintenance Planning Program Element below).

The Township will maintain current level of service for street sweeping activities and all current drainage related activities.

Cost Assumptions:

- For 20-yr maintenance target (basic LOS), dedicate equivalent of 2 personnel to complete stormwater maintenance and repairs full time at average cost of $88k per person. Assume personnel needs double for medium (10-yr) and high (5-yr) LOS targets.
- Purchase Vacuum Truck @ $310K (one-time).
- Assume 10% of inlets cleaned annually will require repairs @ estimated cost of $1,000/inlet.

Alternative Cost Assumptions for Contracted Services:

- Vacuuming for cleaning and maintenance of inlets requires a 2-person crew. Assume 6 inlets cleaned per day.
- Cleaning and flushing of pipe requires a 4-person crew (visual inspection, labor, etc.). The rate of infrastructure cleaning and flushing is dependent on field conditions/amount of debris in the pipe/inlets. Assume 400 lf cleaned and flushed per day.
- Equipment rental for vacuum/flusher = $1,000 per day.
- Assume 10% of inlets cleaned annually will require repairs @ estimated cost of $1,000/inlet.

Level of Service Options:

- ***Basic –*** *Routine cleaning and maintenance of the entire Township system on a 20-year cycle.*
- ***Medium –*** *Routine cleaning and maintenance of the entire Township system on a 10-year cycle.*
- ***High –*** *Routine cleaning and maintenance of the entire Township system on a 5-year cycle.*

Basic	Medium	High
Annual Support Budget $187,500	Annual Support Budget $375,000	Annual Support Budget $574,000
Equipment Costs (One-Time): $310,000	Equipment Costs (One-Time): $310,000	Equipment Costs (One-Time): $310,000
Target Maintenance Cycle 20 Years	Target Maintenance Cycle 10 Years	Target Maintenance Cycle 5 Years

LOS Recommendation: Medium

Key Factors:

This service would likely be performed via contracted service providers initially.

- The Township would maintain current LOS utilizing Public Works Staff to provide a baseline until a decision can be made on whether or not this service should be performed by internal or contracted resources.
- Cleaning during Year 1 would be augmented by System Mapping activities.
- Contracted resources would be utilized to support additional cleaning and repairs.
- Maintenance activities and tracking would be linked to the Maintenance Planning.
- System cleaning and repairs would be informed by the existing conditions assessment.

Timing:

Year 1 - Township will maintain current LOS utilizing Public Works Staff. Note: under system mapping program element – Township will clean remaining inlets to be inventoried.

Year 2-5 – Contracted support would be implemented to augment current LOS and achieve 20-yr cleaning and repair cycle to meet the Basic LOS target.

Year 5+ – Continue with services at Basic LOS and evaluate if resources should be internalized or if mix of internal and contracted support is preferred.

Year 7-10 – Based upon the overall results of the conditions assessment the Township would evaluate whether or not additional system cleaning and repairs (i.e. the High LOS Option) are needed to meet the anticipated replacement backlog. For planning purposes assume service will be ramped up in Year 7 to High LOS utilizing a service contractor.

Cost Center: Infrastructure Operation & Maintenance

Service: Culvert and Channel Maintenance

Current Condition: The Township maintains multiple culverts and channels in the public ROW. Following storm events the potential for significant siltation, sedimentation and debris build up within local streams and waterways may occur, particularly at culverts and bridge crossings. The Township clears channels that are known problem areas prior to a storm. Other areas are addressed only in the event of an emergency.

Streams flowing through culverts and under bridges need periodic dredging to maintain their capacity to carry runoff. More routine dredging, in select areas such as Verner Street or at the confluence of streams throughout the Township, can aid in minimizing flood risks and damage to infrastructure and property.

Need: Routine clearing and dredging of system culverts and bridges to maintain capacity of local streams and waterways, minimize flood hazards at road crossings and protect public health and safety.

Assumptions: Township will establish a routine clearing and dredging program. These activities could be handled either by in-house resources or via contracted services. Assume clearing and dredging will be limited to 50 feet upstream and downstream of culverts and bridges and no permitting will be necessary.

Dredging costs:

- Mobile Dredging and Pumping Contracted Services - $2,500/day

Level of Service Options:

- ***Basic*** *– Contract dredging services for 5 days per year / Budget $12,500 annually.*
- ***Medium*** *– Contract dredging services for 10 days per year / Budget $25,000 annually.*
- ***High*** *– Contract dredging services for 15 days per year / Budget $37,500 annually.*

Basic	Medium	High
Annual Support Budget $12,500 Target Dredging Service 5 days/year	Annual Support Budget $25,000 Target Dredging Service 10 days/year	Annual Support Budget $37,500 Target Dredging Service 15 days/year

LOS Recommendation: Medium

Key Factors: This service would likely be performed via contracted service providers.

- Cross culverts and known problem areas would be targeted initially.
- After the initial years of the program, staff will evaluate the effectiveness of the program and if additional dredging is needed on a more routine basis.

- The Township will develop a list of prioritize locations as part of the maintenance plan and Township wide stormwater system assessment to help directed contracted services and track progress.

Timing:

Year 1 - Township will establish a routine clearing and dredging of Township culverts and bridges beginning with the Basic Level of Service Option in Year 1.

Year 3 – Continue to ramp up dredging/clearing activities to achieve targeted Medium LOS Option.

Year 5 – The Township will evaluate the overall program and determine if routine dredging/clearing is required an annual basis at the Medium LOS or at a lower level.

Year 6+ - For planning purposes assume program will continue at Medium LOS.

Cost Center: Infrastructure Operation & Maintenance

Service: Maintenance Planning

Current Condition: The Director of Planning and Engineering, the Public Works Director and Superintendent meet weekly to coordinate Township maintenance activities and issue resolution on an as-needed basis. There is no comprehensive maintenance plan in place to help direct and prioritize maintenance activities.

Need: Written maintenance plan to establish a routine cleaning, maintenance and repair of the existing stormwater system to coordinate and direct staff efforts. On-going support to monitor performance against Township goals and communicate progress to the public.

Assumptions: The Township needs to develop a reliable GIS database of the storm sewer infrastructure to establish a maintenance plan (see Asset Management). The maintenance plan will be coordinated with operation and maintenance activities, conditions assessment, system mapping, GIS software and MS4 compliance tracking efforts.

Township will develop a means of prioritizing maintenance activities based on findings of the conditions assessment and current operations and maintenance needs.

Township would track maintenance activities including personnel time, materials costs, etc. to refine maintenance plan and resource requirements to meet the targeted levels of services described herein.

Maintenance Planning Cost Assumptions:

- Dedicate Township staff time to create routine maintenance plan. Assume 80 Hours for Township Engineering, Public Works Direct, etc.
- Assume 48 hours/month would be dedicated to ongoing coordination and planning of maintenance activities. Includes field views would be conducted on a routine basis.
- Assume additional engineering support at 8 hours per month based on LOS for replacement and cleaning activities. Basic – 8 hours/month, Medium – 16 hours/month, High – 24 hours/month.

Level of Service Options:

- ***Basic –*** *Establish maintenance plan and provide annual support to coordinate efforts.*
- ***Medium*** *– Same as basic with increased support based on Medium LOS.*
- ***High –*** *Same as basic with increased support based on High LOS.*

Basic	Medium	High
Maintenance Plan Budget: $10,000 Annual Support Budget: $37,000 (Baseline) $1,500 (Additional)	Maintenance Plan Budget: $10,000 Annual Support Budget: $37,000 (Baseline) $3,000 (Additional)	Maintenance Plan Budget: $10,000 Annual Support Budget: $37,000 (Baseline) $5,000 (Additional)

LOS Recommendation: Medium

Key Factors:

This service would likely be performed by Township staff.

- Staff will develop a routine maintenance schedule of activities covering Township-wide stormwater infrastructure.
- Cleaning and repairs would be identified and prioritized in conjunction with the Township-wide assessment and inventory mapping.
- The maintenance plan would be tied to on-going tracking within the GIS database.

Timing:

Year 1 - Township staff will work to develop a maintenance plan. Oversight and tracking will be tied to cleaning and repair activities starting with the Basic LOS level.

Year 2-5 – As Township ramps up maintenance and cleaning activities to Medium LOS ramp up staff oversight of activities accordingly.

Cost Center: Infrastructure Operation & Maintenance

Service: Private Stormwater Management Facility Support

Current Condition: The Township does not currently perform routine maintenance on private stormwater management facilities (i.e. stormwater basins, infiltration BMPs). Staff estimate there are between 50 and 100 private facilities located throughout the Township (a full inventory has not yet been completed). Most private basins are not routinely maintained and most property owners and home owners association do not have the capability / experience to take on major repairs. Maintenance is generally the responsibility of private property owners and/or home-owners associations.

The Township has assisted in addressing maintenance issues in the past, such as maintenance of the Lakemont retention basins in 2014.

Need: A program to assess private facilities systems, work with property owners on maintenance responsibilities and evaluate long term maintenance needs to address long-term operations of these facilities and limit the risk of the Township assuming greater responsibility for the function of private infrastructure.

Assumptions: The Township will research and review deeds, easements and operation and maintenance agreements associated with the estimated 100 private stormwater facilities. Following system inventory, inspection and Township Engineers review, the Township will evaluate maintenance needs and. A written recommendation on facility maintenance needs and future acquisition will be issued.

The information will be linked to the Asset Management System. Any new facilities constructed as part of the development process will be incorporated at the time of construction.

Cost Assumptions:

- Township Engineering will review available documents including approved plans, easements, operation and maintenance agreements, perform field view and meet with facility owner – Estimate 12 hours/facility @$60/hour.
- Budget to provide maintenance support (either material or labor from Public Works). Assume assistance will be needed for 25% of basins @ $5,000/basin.
- New basins would be covered via maintenance and inspection escrow funds per land development process.

Level of Service Options:

- ***Basic –*** *Complete evaluation and initial assistance program within 15 years (7 basin/year).*
- ***Medium –*** *Complete evaluation and initial assistance program within 10 years.*
- ***High –*** *Complete evaluation and initial assistance program within 5 years.*

Basic	Medium	High
Annual Support Budget: $10,000	Annual Support Budget: $20,000	Annual Support Budget: $40,000

LOS Recommendation: Medium

Key Factors:

This service would likely be performed by Township Planning and Engineering Staff.

- The Township would need to make a policy decision on whether or not to provide assistance to private stormwater basin owners and if the Township wants to obtain access/easements or ownership rights to any facilities (if so, criteria should be established).
- If there are basins which drain into the MS4 system, the Township may want to be given priority for compliance reporting purposes.
- Additional support/research may be necessary depending on the extent of available records associated with existing systems.

Timing:

Year 1-2 – Implementation of this program element would be delayed until the system inventory and mapping is completed, the updated MS4 program plan has been established, updates to the Township's stormwater management ordinance have been adopted and initial Stormwater Facility inspections are completed.

Year 3 – Initiate Private Stormwater Management Facility Support beginning with the Basic LOS option.

Year 4 – As the Stormwater Facility Inspections are completed, ramp up services to achieve targeted Medium LOS Option.

Year 5-10 – Based upon the overall results of the facility inspections and evaluation of maintenance capabilities of the owner, the Township would evaluate whether or not to take over ownership of selected basins throughout the Township.

Cost Center: Engineering, Compliance & Asset Management

Service: MS4 Permit Compliance Support

Current Condition: South Fayette Township is subject to Municipal Separate Storm Sewer System (MS4) permit requirements as administered by the Pennsylvania Department of Environmental Protection (PADEP).

The Township is required to complete within each permit cycle for each of the following MCMs:

I. Public Education and Outreach
II. Public Participation and Involvement
III. Illicit Discharge Detection and Elimination (IDD&E)
IV. Construction Site Stormwater Runoff Control (Erosion Control)
V. Post-construction Stormwater Management in New Development and Redevelopment
VI. Pollution Prevention/Good Housekeeping for Municipal Operations

The Director of Planning and Engineering manages the NPDES compliance activities including the re-application process and annual reporting. Staff have indicated additional training and support may be needed to achieve compliance.

Need: A defined and resourced MS4 compliance program plan to protect local water quality, minimize pollution and meet the Township's regulatory requirements. This would also aid the Township in minimizing liability/exposure to potential regulatory enforcement actions.

Assumptions: There are specific activities associated with the six Minimum Control Measures (MCMs), listed below, that the Township is required to complete within each permit cycle.

The Township will need to maintain documentation of all of the Township's MS4 stormwater management activities (planning documents, background files, operation and maintenance records, inspection logs, education outreach program tracking, etc.). The Township anticipates increased staff time will be required to implement the six MCMs and may require additional support to meet the permit requirements.

MS4 Permit Compliance Cost Assumptions:

- The Township will retain a consultant to develop the following:
  - A Written MS4 Compliance Program
  - Inspection Forms and Record Keeping Documents
  - Mapping Guidelines
  - Formalize Spill Pollution and Prevention Guidance
  - Good Housekeeping Training Materials and Training Session

Estimated support costs: $30,000 (one-time)

- Dry Weather/Illicit Discharge Detection and Elimination Inspections would be scheduled to cover 1/3rd of the system annual.

  - With 132 known outfalls, assume 44 inspected annually and budget one week for field inspections. Estimated Costs: $6,000. (Alternative approach would be to find a volunteer organization to perform screenings).
- Township will create a formal agreement with local watershed groups to aid in conducting public outreach and education, public participation and involvement.
- Township would provide dedicated funding for educational materials.
  - Budget public education per capita (pop. 14,500)
  - Support based on LOS selection:
    - Basic: $0.25 per capita = $3,625
    - Medium: $0.50 per capita = $7,250
    - High: $0.75 per capita = $10,875
- Township will formalize agreements with the local conservation district to cover construction inspections during construction. Township will inspect construction projects that do not trigger Conservation District review and approval (costs will be covered by development escrow fees).
- The Township will cover Post Construction Stormwater Management inspections (seed Stormwater Facility Inspections section).

Level of Service Options:

- ***Basic –*** *Establish written program, provide annual IDDE inspection, and basic level public education funding.*
- ***Medium –*** *Same as basic with medium level public education funding.*
- ***High –*** *Same as basic with high level public education funding.*

Basic	Medium	High
Implementation Budget: $30,000 (one-time)	Implementation Budget: $30,000 (one-time)	Implementation Budget: $30,000 (one-time)
IDDE Inspection Support: $6,000 (annually)	IDDE Inspection Support: $6,000 (annually)	IDDE Inspection Support: $6,000 (annually)
Public Education Budget: $3,625 (annually)	Public Education Budget: $7,250 (annually)	Public Education Budget: $10,875 (annually)
Permit Compliance Reporting: $5,000 (annually)	Permit Compliance Reporting: $5,000 (annually)	Permit Compliance Reporting: $5,000 (annually)

LOS Recommendation: Medium

Key Factors: Compliance with permit requirements will need to be evaluated and any identified deficiencies addressed accordingly. The Township would likely contract out support services to augment staff to establish the updated program and assist with annual reporting.

- Updated program and policies should be implemented early on
- System mapping, Facility Inspections, Ordinance Updates and Water Quality projects will assist with permit compliance activities.

- The Township would establish record keeping and reporting requirements to document program activities.
- The Township will need to negotiate and establish agreements with support partners, such as the South Fayette Watershed Conservancy Group and the Allegheny County Conservation District to formalize service/support agreements.
- MS4 program supporting documentation and records would be linked to the GIS database/electronic record keeping.
- Staff expect a backlog of projects would be identified and prioritized.
- The Township will routinely revisit compliance activities in conjunction with updated permit requirements.

Timing:

Year 1 - Township will establish an updated MS4 Program Plan, along with updated policies and procedures for Township activities ($30K – one-time cost). The IDDE inspection program ($6k annually) will be implemented and ongoing public education will be put into place ($7,250 annually). Township will contract out annual permitting support ($5K annually).

Year 2-5 – Continue with annually IDDE, Public Outreach and Reporting activities.

Year 6+ – Update MS4 program plan to meet permit compliance requirements.

Cost Center: Engineering, Compliance & Asset Management

Service: Existing Conditions Assessments

Current Condition: Inspections are currently performed on an emergency/as-needed basis. Routine or planned system inspections are not carried out. Current storm sewer inspection activities are also limited by the availability of televideo equipment which is available from the Municipal Authority or via contracted services.

Need: Performing a routine conditions assessments of the storm sewer to provide the Township with more accurate information on the current conditions of the existing system and help to prioritize maintenance and replacement activities.

This effort would provide input for maintenance planning, system mapping and asset management services.

Assumptions: A dedicated/systematic inspection and assessment plan will be established. The Township could either purchase televideoing equipment and dedicate staff time or contract with an outside service provider to performing conditions assessments.

Some areas of the Township may require specialty services to assess due to poor infrastructure accessibility. The Township will develop a means of prioritizing inspections based on system age and known problem locations.

The system will likely require cleaning prior to visual/televideo assessment. This service would be linked to system cleaning and repairs.

Assessment Costs:

- A televideo contractor with equipment can assess storm sewer condition for $3 to $7/LF. Assumed $5/LF for estimating purchases.
- Road-crossings would be prioritized.

Level of Service Options:

- ***Basic –*** *Assess 1 mile of pipe per year/entire Township system inspected over 32 years.*
- ***Medium –*** *Assess 2 miles of pipe per year/entire Township system inspected over 16 years.*
- ***High –*** *Assess 4 miles of pipe per year/entire Township system inspected over 8 years.*

Basic	Medium	High
Estimated Annual Budget: $26,400 Targeted Assessment: 1 mile per year	Estimated Annual Budget: $52,800 Targeted Assessment: 2 miles per year	Estimated Annual Budget: $105,600 Targeted Assessment: 4 miles per year

LOS Recommendation: High

Key Factors:

This service would likely be performed via contracted service providers.

- Initiating conditions system assessment at the High LOS option can provide the Township with useful data to aid into evaluate repair and replacement needs in a short period of time. If maintained at the High LOS, the system would be completed assessed within 8 years.
- The initial years of the program would target older areas of the community which have not be inspected/field viewed recently.
- Following the initial years (Years 1-4), the Township should have sufficient information and detail on the system to evaluate if televideoing services should be maintained at the High LOS.
- Staff will develop a specification for the televideo contractor.
- Contractor to clean and video the system.
- Contractor reports would include assessment and prioritization recommendations, identifying portions of the system requiring repair or replacement.
- The resulting data would inform ongoing maintenance and repairs as well as planned system replacement.
- System assessment data would be incorporated into the GIS database.

Timing:

Year 1 – Contract services for televideoing and initiate program at the High LOS ($105K/year)

Year 2-4 – Continue televideoing services at High LOS. Following Year 4, evaluate if service should be maintained at this level of if it can be reduced.

Year 5-8 – For planning purposes assume, televideoing will continue at High LOS.

Year 9+ – Budget for additional televideoing services to assist with problem areas/emergency situations which may arise.

Cost Center: Engineering, Compliance & Asset Management

Service: System Mapping and Asset Management

Current Condition: Township Staff estimate that 2/3rds of the Township's stormwater infrastructure has been inventoried (inlets, manholes, pipes, outfalls, swales, etc.) to date. The existing mapping does not include all public and private stormwater management facilities. The current mapping does not include all the elements, recommended by the PADEP for MS4 system mapping. A formalized asset management program has yet to be established.

Need: Complete overall system mapping and implement an asset management program.

Assumptions: The Township will complete the overall system mapping and inventory of stormwater related assets. Current mapping will be augmented to incorporate recommended MS4 mapping elements. Prioritized maintenance, repair and replacement schedules would be established. The asset management program would be actively linked to maintenance records, conditions assessments and field assessments to create a centralized database. Assume that the Township will implement the asset management system within a GIS environment.

Asset Management, Mapping and Inventory Cost Assumptions:

- Staff estimate 400 man-hours @$60/hour including equipment costs are needed to complete mapping. Estimated Costs: $24,000 (one-time).
- Township Public Works Staff would also support mapping by cleaning and clearing the system prior to mapping, removing and replacing grates and manhole covers for visual assessment and inventorying. Estimate 2 person crew for 10 crew weeks to support. Estimated Cost: $68,000 (one-time). This would cover inlet system cleaning for a period of 1-year.
- Provide on-going to support to continue to refine mapping, update as new information becomes available, incorporate assessment and inspection data, etc. Estimate 80 hours annually for GIS Analyst support @$60/hour. Estimated Costs: $4,800.
- Township staff will need to review televideoing reports, field inspections and public works maintenance reports. Tied to existing conditions assessment. Assume 8 hours review per mile of system inspection.

Level of Service Options:

- ***Basic*** *– Complete mapping inventory, provide GIS support and review data of 1 mile/year.*
- ***Medium*** *– Same as basic with data review of 2 miles/year.*
- ***High*** *– Same as basic with data review of 4 miles/year.*

Basic	Medium	High
Initial Costs (One-time): $92,000 Annual Support Budget: $6,000	Initial Costs (One-time): $92,000 Annual Support Budget: $7,000	Initial Costs (One-time): $92,000 Annual Support Budget: $8,000

LOS Recommendation: High

Key Factors:

This service would likely be performed via a combination of Township personnel and contracted service providers.

- Year one would focus on completing the system inventory and updating the mapping.
    - System inventory/mapping would be completed ahead of the implementation of facility inspections and facility support program elements.
    - Cleaning and clearing by Public Works Staff in Year 1 would cover a portion of the system cleaning under the Stormwater Conveyance System Cleaning & Repairs element. Additional routine cleaning would be delayed until Year 2 accordingly.
- Data would be inventoried into GIS and use in conjunction with the existing conditions assessment, maintenance planning, etc.
- Required mapping refinements would be identified under the MS4 Permit Compliance Support element.
- Televideoing/existing conditions assessment data would be incorporated into the mapping database. The Township engineer would review data prior to input to the asset management database.

Timing:

Year 1 - Township would complete inventory / system mapping ($24K). Public Works Department Staff would support effort be clearing and cleaning inlets ahead of system inventory ($68K). The GIS Support Contract to update database/mapping information ($4,800). The Township Engineer to review existing conditions assessment data and provide direction to

Year 2-8 – Continue to incorporate existing conditions assessment data, facility inspection results, MS4 program data (i.e. IDDE inspection results), maintance activity tracking, system replacement, etc. Township Engineer to review data from existing conditions assessment prior to input – estimated completion by Year 8. GIS Support Consultant support provided annually. Estimated costs: $10K/year.

Year 9+ – Continue to maintain and update system inventory data with support of GIS Consultant. Estimated costs: $4,800/yr.

Stormwater Needs Assessment
Level of Service Analysis

Cost Center: Engineering, Compliance & Asset Management

Service: Stormwater Facility Inspections

Current Condition: The Township engineer and/or code inspector perform site inspections during and immediately following construction. Ongoing/routine inspections of both public and private stormwater management facilities are not conducted and there is no formalized BMP Inspection and Tracking program currently.

Private BMP inspection occurs for pre-construction testing and immediately following construction activities.

Based upon previous studies and Township records, staff estimate that there are an estimated 50 to 100 privately owned BMPs throughout the Township. Not all public and private BMPs are inventoried.

Need: Routine inspection of both public and private stormwater facilities. Ongoing inspections help ensure long-term system performance and confirm appropriate maintenance is being performed. The Township's MS4 permit recommends inspection of each BMP once per permit cycle.

Assumptions: The Township will establish annual inspection goals to complete Township wide BMPs inspections in accordance with the MS4 permit cycle. A Township wide BMP inspection and tracking plan would be created and linked with the Asset Management / GIS System.

Landowners with BMPs would be reminded of their maintenance responsibilities every 3-years. Township would send written notifications via mail.

Inspection Costs:

- Assume inspector costs $100/hr including equipment, vehicle and expenses. Assume GPS enabled inspection.
- Daily rate of BMP inventory, inspection and reporting estimated at 4/day to complete initial inventory.
- Following initial verification assumes routine inspections would be performed on a 3-year cycle. Estimate inspection rate at 8 BMPs/day.

Level of Service Options:

- ***Basic –*** *Inventory and inspect all public and private BMPs within 3 years.*
- ***Medium –*** *Inventory and inspect all public and private BMPs within 2 years.*
- ***High –*** *Inventory and inspect all public and private BMPs within 1 years.*

Basic	Medium	High
Annual Support Budget $6,800 Complete Inventory 3 Years	Annual Support Budget $10,000 Complete Inventory 2 Years	Annual Support Budget $20,000 Complete Inventory 1 Year

LOS Recommendation: Medium

Key Factors: This service could be performed by Township Engineering and Planning staff or provided via contracted service.

- Facility inspections would follow system mapping and inventorying.
- Older facilities would be prioritized for inspection during Year 1.
- Results of the inspections would be input into the Township's GIS database.
- Inspection records / files would meet recommended compliance activities of the MS4 permit requirements.

Timing:

Year 1 - Township would inspect 50 (of the estimated 100) private stormwater management facilities to meet Medium LOS target. Estimated cost: $10K.

Year 2- Complete inspections of the remaining 50 facilities. Estimated cost: $10K.

Year 3 – Initiate 3-year inspection cycle of facilities to aligning with MS4 permit requirements. Estimated annual cost: $5K.

Year 4-10 – Continue with routine inspections. Estimated annual cost: $5K.

Cost Center: Engineering, Compliance & Asset Management

Service: Engineering Design

Current Condition: The Township does not currently perform any in depth in-house engineering design. Design services are typically provided by the Consulting Engineer; none were used in 2014 for stormwater.

Staff have indicated a desire to be able perform design of smaller improvement projects in-house. Select small scale projects may require additional engineering support and advice.

More complex replacement projects, water quality and capital Improvement projects may require detailed engineering design, development of construction and bidding packages and permitting prior to construction. For projects selected for construction, bid documents and construction oversight may be required.

Need: Engineering design support for replacement activities and capital improvements projects to make sure system upgrades are sized and constructed to meet current and future conditions as well as meet current design standards and best practices.

Assumptions: In conjunction with pipe replacement activities, water quality projects and capital improvements, the Township will identify required engineering support and establish a schedule/budget for required resources.

Engineering Support Cost Assumptions:

- Assume surveying, planning, engineering, construction and bidding document development and permitting equate to 20% of a project's estimated construction budget. Note: depending on the complexity of the project, assumed percentage/costs may change.
- Anticipated engineering costs based construction budget for pipe replacement, water quality, and capital improvement projects.

Level of Service Options:

- ***Basic –*** *Provide engineering support aligned with 0.25% annual replacement schedule.*
- ***Medium –****Provide engineering support aligned with 0.50% annual replacement schedule.*
- ***High –*** *Provide engineering support aligned with 1.00% annual replacement schedule.*

Basic	Medium	High
Annual Support Budget: $13,200	Annual Support Budget: $25,000	Annual Support Budget: $50,000

LOS Recommendation: Medium

Key Factors:

Depending on the complexity of the project, this service will either be performed by internal resources or via contracted engineering support.

- Engineering support will be tied directly targeted level of system replacement within a given program year.
- Additional support may be required (Years 5-10) if the Township determines that replacement activities should be ramped up to the High LOS.

Timing:

Year 1 – As stormwater replacement activities are initiated at the Basic LOS, engineer design support would begin at corresponding Basic LOS ($13.2K).

Year 3-4 – As Pipe replacement activities will ramp up – engineering support will ramp up accordingly until Medium LOS is established in Year 4 ($25K/annually)

Year 5-10 – In conjunction with conditions assessment, Township will determine if pipe replacement activities need to be ramped up to the High LOS. If so, engineering support will be increased as well. For planning purposes, assume that system replacement activities will be ramped up to the High LOS by Year 7 and engineering support will be increased accordingly ($50K/annually).

Cost Center: Engineering, Compliance & Asset Management

Service: Ordinance and Construction Standards Development and Updates

Current Condition: The Township's current stormwater management ordinance was last updated in 2004. Since that time, stormwater management standards of practice and design have continued to evolve. Based upon discussion with Township staff local ordinances regulating zoning, land development and stormwater management should be reviewed and updated in order to adopt practices which encourage better stormwater management through various planning, engineering and site design approaches.

Staff have also noted that updated construction standards and operation and maintenance guidance/requirements would be useful in constructing and maintaining both public and private infrastructure. The Township has limited construction standards and guidance recommendations for operation and maintenance associated with stormwater infrastructure.

Need: Update the current stormwater management ordinance and develop construction standards to reflect current standards of practice adapted for South Fayette Township.

Assumptions: The Township Engineer and contracted engineering support will be responsible for evaluating current stormwater management guidance and ordinance requirements, drafting updates, as well as creating construction standards and operation and maintenance guidance/requirements.

Cost Assumptions:

- Contract with consultant to support ordinance updates and development of construction standards. Estimated costs: $10,000 (one time).

Level of Service Options:

- ***Basic –*** *Complete ordinance updates by third year of program.*
- ***Medium –*** *Complete ordinance updates by second year of program.*
- ***High –*** *Complete ordinance updates in first year of program.*

Basic	Medium	High
Estimated Support (One-time): $10,000 Complete within 3 years	Estimated Support (One-time): $10,000 Complete within 2 years	Estimated Support (One-time): $10,000 Complete within 1 years

LOS Recommendation: High

Key Factors: This service would be supported by contracted engineering services and support from the Township Solicitor to assist with updates to the stormwater management ordinance.

- Updates to the ordinance would reflect and align with updated Township MS4 permit requirements.
- Management requirements would be adjusted to meet watershed specific criteria when available.
- Inspection and enforcement requirements should be updated to better meet anticipated stormwater program needs, such as
- The ordinance could include a provision to incorporate and reflect the results of future watershed studies.

Timing: **Year 1** – Work with engineering service provide to update the Township's stormwater management ordinance updates and develop Township standards for stormwater convenyance and management facility design. Budget for a one-time cost of $10K.

Stormwater Needs Assessment
Level of Service Analysis

Cost Center: Engineering, Compliance & Asset Management

Service: Watershed Planning Support

Current Condition: Detailed Act 167 Plans for each of the Township's seven watersheds have not been completed. An initial county wide assessment identified 14 flood prone areas and two areas of accelerated erosion within South Fayette.

Stormwater management is implemented on a project by project basis via the land development process. The Township does not currently evaluate the impact of land development projects, anticipated community growth, capital improvement and infrastructure projects on a watershed.

Need: Watershed planning that aids the Township in addressing stormwater infrastructure needs: to effectively plan for and manage community growth, protect local water resources, minimize impacts from increased runoff to water quality, quantity and peak flows. Larger scale watershed planning may also help to identify stormwater management and infrastructure strategies that address existing flooding and water quality impairments as well as to respond to continued pressures from ongoing development.

Assumptions: The Township would identify critical areas and provide sufficient resources to complete watershed planning efforts. Watershed plans may include a more detailed evaluation of the following:

- Flood prone/known problem areas
- Stream conditions & water quality impairments
- Impacts from potential growth (build out)
- Regional BMP approaches

Effort would likely include a mix of staff, consult and partner organization support (both local and regional). Field reconnaissance and assessment, modeling, monitoring, survey, engineering and public outreach may be needed depending on the extent and scale of the planning effort.

Watershed Planning Cost Assumptions:

- Complete Township Wide Assessment – Baseline Watershed Plan: $100K
- Complete Watershed Specific Studies: $60K / watershed.
- Township would eventually complete studies for all 7 watersheds.

Level of Service Options:

- ***Basic –*** *Complete a township wide assessment and one detailed watershed within 5 years.*
- ***Medium –*** *Complete a township wide assessment and two detailed watershed within 5 years.*
  High *– Complete a township wide assessment and three detailed watershed within 5 years.*

Basic	Medium	High
Estimated Support Budget $160,000 1 plan / 5 years	Estimated Support Budget $220,000 2 plans / 5 years	Estimated Support Budget $280,000 3 plans / 5 years

LOS Recommendation: Medium

Key Factors: This service would likely be performed via contracted engineering support.

- The Township would begin by developing a Township Wateshed Management planning framework and then prioritize each of the 7 Township watersheds based upon anticipated growth and severity of existing stormwater management issues such as flooding and water quality issues.

Timing:

Year 2-3 – A high-level township wide watershed management plan would be developed ($50K/year).

Year 4-5 – The Township would develop detailed watershed management plas for two priority watersheds ($60K/watershed).

Year 5-10 – The Township would continue to perform a watershed evaluation every other year ($60K/watershed). This process would continue until detailed watershed plans are developed for all watershed within the Township.

Appendix F
Draft 10-Year Program Plan

South Fayette Township DRAFT 10-Year Program Plan

Cost Center	Program Element	LOS Target	Estimated Annual Costs	Annual Costs Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Years 10-15	Notes
INFRASTRUCTURE - OPERATIONS & MAINTENANCE															
Enhanced Program	Stormwater Conveyance System Cleaning & Repairs	Medium	$375K	$ -	$ 121,000	$ 121,000	$ 121,000	$ 121,000	$ 121,000	$ 241,000	$ 241,000	$ 241,000	$ 241,000	$ 1,205,000	Delay additional maintenance and cleaning until mapping is completed. Begin to ramp up cleaning activities in Year 2 by utilzing contracted services and ramp up services over time via contracted services. Target 10-year maintenance cycle.
	Culvert and Channel Maintenance	Medium	$25K	$ 12,500	$ 12,500	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 125,000	Begin with basic level of service to provide 5 days for contracted dredging services ($12,500). Evaluate need following Year 3 and ramp up To medium LOS target for 10 days of targeted clearing and dredging via contracted services if needed.
	Maintenance Planning	Medium	$40K	$ 50,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 200,000	Establish maintenance plan during Year 1 ($10K - onetime costs). Provide annual personnel support at medium LOS ($40K).
	Private Stormwater Management Facility Support	Medium	$20K	$ -	$ -	$ 10,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 100,000	Provide personnel (Township Engineer) and maintenance staff time to assist with private stormwater system maintenance. Begin full support for program following completion of system mapping and facility inspection - estimated Year 4.
Cost Center Subtotal Cost	ENHANCED PROGRAM			$ 62,500	$ 173,500	$ 196,000	$ 206,000	$ 206,000	$ 206,000	$ 326,000	$ 326,000	$ 326,000	$ 326,000	$ 1,630,000	
Current Program	Planning & Oversight	Current	$35K	$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ 175,000	700 hrs of staff time dedicated to manage stormwater operation and maintenance activities ~ $35K
	Stormsewer Cleanning and Minor Repairs	Current	$108K	$ 110,000	$ 110,000	$ 110,000	$ 110,000	$ 110,000	$ 110,000	$ 110,000	$ 110,000	$ 110,000	$ 110,000	$ 550,000	2 Man Crew for approximately 8 months per year. 11 inlet repairs per year on average.
	Street Sweeping Activities	Current	$41K	$ 41,000	$ 41,000	$ 41,000	$ 41,000	$ 41,000	$ 41,000	$ 41,000	$ 41,000	$ 41,000	$ 41,000	$ 205,000	Current street sweeping program consists of 2 personnel for approximately 12 weeks per year (Spring/Fall cycles).
	Pre and Post Storm Activities	Current	$35K	$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ 175,000	75% of Field Crew. Full day per event. 10 Events in 2014. 1 Full day of 5 - 2 Man Crews for 8 hours. Estimated Costs @ $35K.
	Equipment Maintenance, Parts & Fuel	Current	$15K	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 75,000	Annually - 2 Weeks for Street Sweeper Maintenance requiring 2 Mechanics ($8,500). Additional 25% of time for general equipment maintenance. $2K for fuel. $3500 for street sweeper parts. $1,000 for tires and tubes.
Cost Center Subtotal Cost	CURRENT PROGRAM			$ 236,000	$ 236,000	$ 236,000	$ 236,000	$ 236,000	$ 236,000	$ 236,000	$ 236,000	$ 236,000	$ 236,000	$ 1,180,000	
Cost Center Total Cost	**CURRENT + ENHANCED PROGRAM**			**$ 298,500**	**$ 409,500**	**$ 432,000**	**$ 442,000**	**$ 442,000**	**$ 442,000**	**$ 562,000**	**$ 562,000**	**$ 562,000**	**$ 562,000**	**$ 2,810,000**	
Engineering, Compliance & Asset Management															
Enhanced Program	MS4 Permit Compliance Support	Medium	$18.3K	$ 43,250	$ 18,250	$ 18,250	$ 18,250	$ 18,250	$ 18,250	$ 18,250	$ 18,250	$ 18,250	$ 18,250	$ 91,250	Implement updated MS4 program Year 1 (Estimated one-time cost of $30K). Provide annual support for IDDE Inspection ($6K), Public Education ($7,250)and reporting support ($5K) annually at medium LOS target ($18,250).
	Existing Conditions Assessment	High	$105K	$ 105,000	$ 105,000	$ 105,000	$ 105,000	$ 105,000	$ 105,000	$ 105,000	$ 105,000	$ -	$ -	$ -	Televideo - 4 miles of the existing system per year at estimate cost of $5/LF. Assessment completed within 8 years. Budget $10K annually for additional televideoing following completion of system assessment.
	Stormwater Mapping and Asset Management	High	$10K	$ 100,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 4,800	$ 4,800	$ 24,000	In Year 1 - complete system mapping ($24k one time). Staff to clean inlets/storwmater system in conjunction with mapping effort ($68K one time). Budget Time annually for GIS ($4800) and Township Engineer ($5200) support to refine asset management system and update mapping ($10K annually) until conditions assessment is completed in Year 8.
	Stormwater Facility Inpsections	Medium	$10K	$ -	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 50,000	Begin facility inspections during Year 2 following the completion of system mapping. Complete inventory in 2 years and inpsect on a 3 year cycle thereafter. Assume staff or contractor to provide inspection support.
	Engineering Design	Medium	$25K	$ 13,200	$ 13,200	$ 19,000	$ 25,000	$ 25,000	$ 25,000	$ 49,000	$ 49,000	$ 49,000	$ 49,000	$ 245,000	Provide engineer design support based upon target replacement schedule. Target medium LOS for replacement to begin in Year 5. Ramp up support in accordance with replacement activity.
	Ordinance & Construction Standards	High	N/A	$ 10,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	Estimated one-time costs of updated ordinance and development standards ($10K) - Target completion within Year 1. No ongoing costs.
	Watershed Planning Support	Medium	N/A	$ -	$ 50,000	$ 50,000	$ 60,000	$ 60,000	$ -	$ 60,000	$ -	$ 60,000	$ -	$ 180,000	Complete Township-wide /high-level stormwater management plan (estimated one-time costs: $100K). Target completing 2 watershed specific plans within the first 5 years of the program.
Cost Center Subtotal Cost	ENHANCED PROGRAM			$ 271,450	$ 206,450	$ 212,250	$ 228,250	$ 228,250	$ 168,250	$ 252,250	$ 192,250	$ 142,050	$ 82,050	$ 590,250	
Current Program	General Engineer, Complaince and Asset Managet Support	Current	$41K	$ 41,000	$ 41,000	$ 41,000	$ 41,000	$ 41,000	$ 41,000	$ 41,000	$ 41,000	$ 41,000	$ 41,000	$ 205,000	1000 hrs of staff time ~ $41K. Includes general MS4 compliance reporting, response to complaints, public education and outreach.
	GIS Consultant Support and Software Licensing Fees	Current	$1K	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 5,000	Shared consultant services for GIS support. Assume 20% of time goes to SW related mapping support. $10K in 2013 and $2,500 in 2014. Licensing Fees. Estimate $1K annually
	Chartiers Valley DFA Contribution	Current	$5K	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 25,000	Contribution to Chartiers Valley DFA $5K annually.
Cost Center Subtotal Cost	CURRENT PROGRAM			$ 47,000	$ 47,000	$ 47,000	$ 47,000	$ 47,000	$ 47,000	$ 47,000	$ 47,000	$ 47,000	$ 47,000	$ 235,000	
Cost Center Total Cost	**CURRENT + ENHANCED PROGRAM**			**$ 318,450**	**$ 253,450**	**$ 259,250**	**$ 275,250**	**$ 275,250**	**$ 215,250**	**$ 299,250**	**$ 239,250**	**$ 189,050**	**$ 129,050**	**$ 825,250**	