



## Level of Service and Prioritization of Stormwater Program Efforts

### Background:

In the fall of 2017, the Advisory Committee and staff discussed the policies and potential actions to address priorities in services for the management of the stormwater infrastructure and programs. As a refresher, the following provides a summary of the level of service discussions.

### A. Level of Service (LOS) Analysis

Addressing program gaps and system performance needs requires an analysis of the future levels of services that will build capabilities over time to meet the expectations for stormwater system performance that the Township has established. Changing a community's stormwater program to meet an established LOS goal typically occurs over a period of several years and involves making strategic decisions across a series of stormwater functional areas and adding capabilities, as needed. To plan for this change, information was gathered about what is important to the community to move the program in a direction that has strong stakeholder support and reflects the needs of the Township.

### Definitions

The concept of service level defines how the Township will build and provide its stormwater management program in the future. It generally describes how services will be administered, performed, and measured. The Township's service level philosophy is likely to change gradually over time as the program is refined and expanded to address system needs for oversight and capital investment for both water quantity and quality protection. In addition, physical system operation and maintenance standards will likely adjust as community needs and expectations are met. The concepts of Service Area, Extent of Service and Level of Service were discussed, and identification of key partners was completed (i.e., private landowners, PennDOT, Penn State University, and other MS4 permittees in the region).

The following general definitions delineate the major segments of the service level philosophy;

- **Service Area** addresses the geographical area where the Township accepts responsibility for and performs stormwater management services through its stormwater program, by providing regulatory control of engineering and development standards, capital improvements, asset management, and maintenance and operations.
- **Extent of Service** addresses the application of specific stormwater responsibilities and activities to the physical systems. It defines the "inner boundaries" of specific elements of the stormwater management program in a manner similar to the way Service Area defines the outer boundaries.
- **Level of Service** policy defines system performance capability objectives, the condition that should exist in each type of system. This includes the degree of effort/service that is desired for certain activities. They also dictate how system performance and conditions should be judged, measured, estimated, or otherwise validated, and how productivity "yardsticks" can be used to guide management decisions.

## Program Gaps Analysis and Prioritization

Through interviews with staff and review of current system data, including the MS4 permit mandates, gaps and needs in service levels and areas were documented and presented to the Advisory Committee and the Board of Supervisors to gain insight into community-driven priorities. Over a period of several meetings, actions were discussed and a timeline along with resource needs were identified. The top priorities and the sequence of investment in solutions resulted in a draft program level of service summary.

An assessment of the physical system while current services are maintained at FY18 budget levels was clearly identified by all as the key to establishing a long-term strategy for stormwater management in the Township. A five-year and a ten-year plan set forth the sequencing of investment to address LOS issues. Using the adopted Capital Improvement Program (CIP) along with continued support from the Transportation Improvement Fund (TIF), resulted in the potential for a consistent reinvestment plan for the short-term. No major CIP changes occur in the projected plan, which will be informed and potentially expanded, based on the infrastructure assessment completed within 18 to 24 months.

## B. Priorities Identified in Phase I

Additional priorities include dedicated field staff and appropriate equipment; MS4 permit compliance including construction of pollutant reduction best practices as required by the permit terms; and through additional field staff, development of on-going inspection of the infrastructure (after completion of the initial system assessment) based on an updated inventory of all system components. The priorities in the draft plan follow this sequence:

### Year 1 –

- Initiate System Assessment (pipe, channels, storage/treatment facilities such as ponds and infiltration systems) – complete within 18 to 24 months.
- Update inventory of all system components constructed prior to 2003.
- Maintain compliance with MS4 permit mandates.
- Maintain CIP projects as defined in adopted 2018 CIP program. Maintain partnership with TIF for roadway drainage improvements.

### Year 2 –

- Complete System Assessment and finalize on-going inspection program in GIS to inform on-going maintenance needs and implement inspection program.
- Maintain MS4 permit compliance mandates.
- Establish inlet repair program to rehab 10 to 15 inlets a year.
- Maintain CIP projects as defined in adopted CIP program and/or shift project schedules to address any critical failures identified during assessment process.
- Using assessment data, prioritize immediate maintenance needs, short-term investment needs, and long-term CIP. Update CIP priorities through adoption of an amended plan. Maintain partnership with TIF for roadway drainage improvements.

## Year 3 –

- Budget for new field crew dedicated to stormwater infrastructure maintenance and equip as appropriate.
- Prepare system-wide master plan and identify locations for infrastructure investments such as Green Infrastructure treatment (e.g., rain gardens, infiltration trenches).
- Maintain infrastructure system inspection program.
- Maintain inlet repair program to rehab 10 to 15 inlets a year.
- Maintain CIP investment levels based on FY18 adopted Plan as adjusted in Year 2 to address critical system needs. Maintain partnership with TIF for roadway drainage improvements.

## Year 4 –

- Maintain inspection program as established after completion of assessment.
- Maintain MS4 permit compliance.
- Maintain inlet repair program to rehab 10 to 15 inlets a year.
- Based on Master Plan and Green Infrastructure strategy, update CIP priorities to address long-term plan for overall system rehabilitation for a ten-year planning period.
- Maintain partnership with TIF for roadway drainage improvements.

## Year 5 –

- Maintain inspection program as established after completion of assessment.
- Maintain MS4 permit compliance.
- Maintain inlet repair program to rehab 10 to 15 inlets a year.
- Based on Master Plan and Green Infrastructure strategy, update CIP priorities to address a ten-year planning period.
- Maintain partnership with TIF for roadway drainage improvements.

**Detail Summary of Program Elements by Year and Cost Basis**

Program Cost Area	Cost Basis	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
<b>A. Infrastructure Inspection and Assessment Program</b>						
1. Research and inventory BMPs/Basins constructed prior to 2003 (back to 1975) capturing specific data on location, type, date constructed, and owner; add to overall system inventory for inspection and assessment.	One Intern for 480 hours @\$15 an hour each summer – dedicated to inventory and inspection program	✓	✓	✓	✓	✓
2. Inspect inlets, developing inventory including condition, material, geolocation, and photograph.	One Intern for 480 hours @\$15 an hour each summer – dedicated to inventory and inspection program	✓	✓	✓	✓	✓

Program Cost Area	Cost Basis	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
3. Contract CCTV pipe inspection (35 miles) using NASSCO rating scale. Service includes pipe cleaning in advance, traffic controls, TV footage upload, and classification by material type, rating, location.	Based on experience in Ferguson - \$10,000/mile of pipe inspected.	✓				
4. West End cross-pipe inspection and assessment, updating inventory data: location, headwall/outlet condition, material, pipe status (clogged, open, debris build up, sediment buildup) and add inventory to database.	No additional cost - completed by Foreman and one worker	✓				
5. Based on an estimate of linear feet of pipe crossing private property that connects public system to basin, to private system, to direct discharge, to channels, add to CCTV inspection program.	Based on experience in Ferguson - \$10,000/mile of pipe inspected.	✓				
6. Contract system-wide condition assessment for above ground system components (basins, channels, BMPs, other than inlets)	Approximately 265 above ground structures (basins, BMPs, outfalls) 5 a day; 53 day workload - two people using hand-held data capture such as smart phones; weekly data review to ensure data capture/picture loading; 425 hours/2 people or 850 hours plus direct expenses @ \$80 hr plus 100 hrs of database review @ \$100/hr = \$78K labor and \$1K expenses = \$79K Channels - 70,000 linear feet - drone inspected including video capture, condition assessment, database input and QA/QC, summary report = 160 person hours \$125 plus 80 person hours @\$90 + direct expenses	✓				
7. Convert part-time stormwater inspector position to full-time and assign oversight of system-wide inspection program and interns.	Cost based on current benefit package and full year salary at a grade 22 position classification.	✓	✓	✓	✓	✓
8. Develop long-range inspection program to maintain current data on system status.	Existing staff will develop a program for inspection of all stormwater infrastructure	✓				
9. Add stormwater dedicated maintenance crew to address non-roadway maintenance. Team includes:						
i. Foreman	Grade 20			✓	✓	✓

Program Cost Area	Cost Basis	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
ii. Equipment Operator	Grade 18			✓	✓	✓
iii. Stormwater Worker (2)	Grade 17			✓	✓	✓
10. Establish Maintenance plan for above-ground system repairs based on assessment and prioritization plan.	Inspector, working with Road Superintendent, FTPW Director, and Township Engineer plan developed for routine maintenance of stormwater systems		✓			
11. Purchase vactor truck and continue borrowing/sharing equipment as needed for maintenance program	Estimated cost based of \$230K stated in on 2018 \$\$s		✓			
12. Develop protocols for on-going inspection program to ensure that all system components are inspected on routine basis. Implement in year 3 after completion of the first round of a complete assessment of all public and private system components (those addressed in policy regarding public runoff).	Developed internally based on inspection schedule for all stormwater infrastructure		✓			
13. Continue system-wide assessment of infrastructure as needed and finalize on-going inspection/assessment long-range plan.	Contingency for contracted services in year one for system inspections. On-going program utilizes two interns annually with oversight by Stormwater/Roadways foremen.		✓	✓	✓	✓
14. Purchase CCTV camera and truck for long-term inspection of all pipe (roadway, cross-connecting in West End, crossing private property carrying public runoff)	\$180K truck for camera, computer setup, various equipment storage plus camera, computer, line, supplies. (\$25K) - 2018 \$\$s			✓		
15. Evaluate staffing/material/equipment needs based on initial system assessment and stormwater crew accomplishments	On-going assessment of staffing, evaluating effort and accomplishments to determine if additional resources (contracted or internal) are needed.			✓		
16. Prepare system-wide master plan, identifying potential sites for GSI and partnerships to reduce runoff volumes impacting channels and stream erosion.	Contracted, HH model, master plan and GSI evaluation; ordinance review and draft changes; training for engineering community			✓		
17. Develop design standards for LID and GSI use in Ferguson. Provide training to engineering community on approved/encouraged practices. Determine need for ordinance updates based on design standards.	Contracted engineering services for the development of a GSI Design Standards Manual				✓	

Program Cost Area	Cost Basis	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
18. Sustain above ground infrastructure maintenance program for basins, BMPs, channels. Assess progress in addressing critical/high priority problems identified in the assessment program.	Materials and supplies for routine maintenance of stormwater systems			✓	✓	✓
19. Maintain pipe inspection program using Township equipment - priority is pipe with poor grade on first round	Based on purchase of CCTV rig. Utilities stormwater crew for staffing of program.				✓	
20. Purchase flusher truck (chassis and unit)	\$205K equipment cost estimate in 2018 \$s.				✓	
21. Evaluate overall investment program in GSI, based on Master Plan prepared in Year Three; identify strategies and opportunities for partnering in Year Four and Five	FTPW Director, Township Engineer, lead inspector to develop updated CIP for installation of GSI features					✓
<b>B. Maintain MS4 primary program requirements responding to permit renewal feedback as needed. (Program Plan, Annual Report)</b>		<b>Operations Costs of \$247,966 in Year One growing to \$279,723 in Year Five based on labor and direct cost percentage dedicated to MS4. Capital Costs captured under CIP.</b>				
1. Public Education and Outreach		✓	✓	✓	✓	✓
2. Public Involvement		✓	✓	✓	✓	✓
3. Construction Site Inspection/ Enforcement (done by CCCD).		✓	✓	✓	✓	✓
4. Post Construction Management (20% inspection of private BMPs/enforcement of maintenance requirements)		✓	✓	✓	✓	✓
5. Illicit Discharge – outfall screening of 20% a year including inspection for infrastructure condition		✓	✓	✓	✓	✓
6. Good Housekeeping Practices		✓	✓	✓	✓	✓
<b>C. CIP – implement projects as adopted in 5-year plan.</b>						
1. Park Hills Drainageway Improvements Survey, Monument, Design and Permitting Phase 2	Based on current CIP project cost	✓				

Program Cost Area	Cost Basis	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
2. Park Hills Drainageway Improvements Phase 1 Construction	Based on current CIP project cost	✓				
3. MS4 Chesapeake Bay Pollutant Reduction Plan Implementation (Design, ROW, Permitting, Construction)	Based on Pollution Prevention Plan of 2018	✓	✓	✓	✓	✓
4. Park Hills Drainageway Improvements Survey, Monument, Design and Permitting Phase 3	Based on current CIP project cost		✓			
5. Park Hills Drainageway Improvements Phase 2 Construction	Based on current CIP project cost		✓			
6. Park Hills Drainageway Improvements Phase 3 Construction	Based on current CIP project cost			✓		
7. Maintain capital investment based on historical average annually.	Based on current CIP project cost					✓
8. Replace CMP identified as "critical failures" based on completed CCTV inspection	Fixed reinvestment program - adjust based on CCTV inspection completion	✓	✓	✓	✓	✓
9. Repair stormwater inlets based on assessment/inspection program (10-15)	10 to 15 a year at \$3000 to \$5000 a repair	✓	✓	✓	✓	✓

## Discussion:

Service Area: Three concepts were considered during Phase I on clarifying service area and delineation of levels of service geographically. Coming to consensus on advice and guidance to the Board of Supervisors from the SAC and staff is important to the process of refining the Program of Services, the Cost of Service Analysis and the finalization of Rates. The three approaches were:

- Rural – Urban Levels of Service with individual cost assignment based on specific services delivered in each area using two unique fee rates.
- Rural – Urban Levels of Service with a baseline cost to share for administrative and permit compliance costs; individual operations/capital fee charges based on specific services provided; one baseline fee rate and two unique fee rates based on levels of service (e.g., baseline rate all pay + unique rate based on LOS by geography).
- All property owners share equally in the cost of services; no differentiation in fee rate.

In addition, service area has an impact on determining the basis of fee charges, using a definition of impervious area that reflects a fair allocation and recognizes density of development between urban/urbanizing and rural areas of the Township.

Refinement of the service area definition is needed.