
Wissahickon Creek Watershed Act 167 Plan

Prepared by



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And



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April 2014 (revised November 2014)

Table of Contents	Page
Introduction	vi
Section 1: Watershed Location and Setting	1-1
Section 2: Watershed Characteristics and Runoff	
2.1 Precipitation	2-1
2.2 Surface Features	2-3
2.3 Projected Growth and Land Use Projections	2-16
Section 3: Stormwater Problems	
3.1 Flooding	3-1
3.2 Stream Impairment	3-10
3.3 Municipal Problem Area Survey	3-15
3.4 Drainage and Stormwater Collection Systems	3-18
Section 4: Model Development and Application	
4.1 Development of the Act 167 Hydrologic Model	4-1
4.2 Modeling Assumptions	4-6
4.3 Modeling Calibration	4-6
4.4 Model Applications	4-8
Section 5: Criteria and Standards for New Development	
5.1 Model Ordinance Summary	5-1
5.2 Applicability and Exemptions	5-2
5.3 Stormwater Management Criteria	5-5
Section 6: Stormwater Improvements	
6.1 Detention Storage Facilities	6-2
6.2 Potential Infiltrations Sites	6-3
6.3 Riparian Buffer Restoration	6-5
6.4 Hydrologic and Water Quality Impact of the Proposed Improvements	6-7
6.5 Improvement Site Ranking	6-15
Section 7: Plan Implementation	
7.1 Municipal Adoption of Ordinance or Regulations to Implement the Plan	7-1
7.2 Municipal Implementation of Stormwater Improvements	7-4
7.3 County-Wide Coordination	7-5
7.4 Commonwealth of Pennsylvania Actions	7-6
7.5 Landowners' and Developers' Responsibilities	7-6
7.6 Plan Review	7-6
7.7 Milestones	7-7
Appendix A: Model Ordinance	
Appendix B: Hydrologic Model Parameters and Calibration Report	
Appendix C: Recommended Improvements	
Appendix D: Wissahickon Watershed Culverts	

Appendix E: *Final Report: Inventory of Existing Stormwater Management Facilities with Retrofit Potential Within the Wissahickon Creek Watershed, Philadelphia Water Department, 2008*

Appendix F: Wissahickon Watershed Act 167 Plan Public Hearing Comments and Comment Responses

List of Figures

1.A	Watershed Overview	1-3
1.B	Major Tributaries	1-4
2.1.A	Precipitation Events in the Wissahickon Watershed	2-3
2.2.A	Digital Elevation Model	2-7
2.2.B	Hydrologic Soil Groups	2-8
2.2.C	Soil Erodibility	2-9
2.2.D	Existing Land Use	2-10
2.2.E	Flash Flood Potential Index	2-11
2.2.F	Existing Detention Basins	2-12
2.2.G	Stormwater Collection and Outfalls	2-13
2.2.H	Stormwater Outfalls	2-14
2.2.I	Stormwater Collection System for a Portion of Upper Dublin Township, Montgomery County, PA	2-15
2.3.A	Projected Land Use - Trend	2-24
2.3.B	Projected Land Use - Green	2-25
3.1.A	FEMA Floodplains	3-3
3.1.B	100-Year Floodplain – Pine Run and Rapp Run showing Flooding of Virginia Drive – Upper Dublin Township, Montgomery Co., PA	3-4
3.1.C	FEMA Flood Insurance Claims	3-6
3.1.D	Repetitive Flood Insurance Claims	3-7
3.1.E	Floods Exceeding Obstruction Capacity	3-9
3.2.A	Stream Reaches Lacking Sufficient Riparian Buffer	3-11
3.2.B	Municipal Problem Areas	3-12
3.2.C	Example of streambank erosion and bank undercutting	3-13
3.2.D	Impaired Streams	3-14
4.1.A	Subwatershed Delineation for the Wissahickon Watershed Showing 137 Subbasins	4-3
4.1.B	NRCS Runoff Curve Numbers for Each of the 137 Subbasins	4-4
4.2.C	Sample Stream Reach Schematization	4-5
4.3.A	Diagram of Wissahickon 137-Subbasin Hydrologic Model	4-7
4.3.B	Development and Calibration of the 137-Subbasin Hydrologic Model	4-8
4.4.A	Volume Increase for 1-Yr Storm – Trend Scenario	4-10
4.4.B	Hydrologic Impact of Projections for Wissahickon Creek at Mouth	4-11
4.4.C	Points of Interest Method Used for Modeling to Determine Release Rates	4-13
4.4.D	Points of Interest Used for Modeling to Determine Release Rates	4-14
4.4.E	Peak Rate Management District Map for the Wissahickon Watershed	4-15

5.3.A	Proposed Peak Rate Control Management Districts	5-9
6.A	Distribution of Potential Improvements in the Wissahickon Watershed	6-1
6.1.A	Sample Detention Basin Site Map	6-3
6.2.A	Sample Infiltration Site	6-5
6.3.A	Sample Riparian Buffer Restoration Site	6-7
6.4.A	Reduction in Subbasin Peak Flow Rates for the 10-year Event With Proposed Improvements in Place	6-12
6.4.B	Reduction in Subbasin Flow Volume for the 10-year Event With Proposed Improvements in Place	6-13
6.4.C	Water Surface Elevation Profiles for 2-Yr Design Storm Rose Valley Creek in Ambler and West Ambler, Montgomery County	6-14
6.4.D	Bells Mill Run Stream Restoration	6-14
6.5.A	Location and Rank of Proposed Detention and Infiltration Improvements	6-16
6.5.B	Location of Potential Riparian Buffer Restoration Sites	6-17
7.1.A	Comparison of Wissahickon and Pennypack Peak Rate Management Districts	7-2

List of Tables

i.1	Required Contents of Watershed Storm Water Plans Under Sections 5(b) and 5(c) of Act 167	xi
1.A	Population by Municipality	1-1
2.1.A	Rainfall totals for 24 hour design storms	2-2
2.3.A	Population Growth and Housing Needs in the Wissahickon Watershed	2-17
2.3.B	Land Consumption Rates: Trend Development Scenario	2-18
2.3.C	Trend Scenario Land Allocation	2-20
2.3.D	Land Consumption Rates: Green Development Scenario	2-21
2.3.E	Green Scenario Land Allocation	2-23
3.1.A	Buildings affected by Floodways and 100- and 500-Year Floodplains	3-5
3.2.A	Municipal Sediment Waste Load Allocations	3-15
3.3.A	Wissahickon Watershed Problem Identification	3-16
3.3.B	Problems Reported by Municipalities	3-17
5.2.A	Exemptions for the Montgomery County Portion of the Watershed	5-3
5.2.B	Exemptions for the Philadelphia County Portion of the Watershed	5-4
5.3.A	Peak Rate Control Standards by Stormwater Management District in the Wissahickon Creek Watershed	5-8
6.3.A	Potential Total Riparian Buffer Restoration Areas by Municipality	6-6

6.4.A	Impact of Proposed Improvements on Peak Discharge and Runoff Volume	6-8
6.4.B	Comparison of Existing, Trend, Green, and Future Peak Flows	6-9
6.4.C	Existing and Future Conditions Peak Flows for the 10-Year Event	6-9
6.4.D	Inflow, Outflow, and Storage for the 10-Year Event before and after Improvement of the Facilities	6-10
6.4.E	Inflow, Outflow, and Storage for the 10-Year Event - Proposed New Facilities	6-11
7.1.A	Status of Municipal Ordinances	7-3
7.2.A	Reduced Volume Reduction Targets	7-5
7.7.A	Milestones for Implementing the Wissahickon Watershed Act 167 Plan	7-7

Introduction

This plan has been developed for the Wissahickon Creek Watershed in Montgomery, and Philadelphia counties, Pennsylvania, to comply with the requirements of the Pennsylvania Stormwater Management Act of 1978, also known as Act 167. The Act requires Pennsylvania counties to prepare and adopt stormwater management plans for each watershed located in the county, as designated by the Pennsylvania Department of Environmental Protection (DEP). It also requires municipalities to implement a stormwater management ordinance limiting stormwater runoff from new development and redevelopment.

The main objective of the plan is to control stormwater runoff on a watershed basis rather than on a site-by-site basis, taking into account how development and land cover in one part of the watershed will affect stormwater runoff in all other parts of the watershed. Consistent with Act 167, the plan seeks to:

- preserve and restore the flood carrying capacity of watershed streams;
- reduce erosion and sedimentation;
- preserve natural stormwater runoff regimes and the natural course, current and cross sections of streams; and
- protect and conserve ground water and ground water recharge areas.

The plan also seeks to address serious water quality problems that are noted in Section 3. The vast majority of the watershed's streams are considered impaired according to water quality reports prepared by the Department of Environmental Protection. Through implementation of the stormwater improvements recommended in Section 6 and Appendix C, the plan will simultaneously reduce flooding, erosion and sedimentation, and improve water quality.

The final plan offers a highly analytical approach to the Act 167 planning process that incorporates detailed watershed scale hydrologic modeling. While all study elements required for an Act 167 study were completed as listed in Table 1.1, the study team expanded the analytical work to include the evaluation of alternative stormwater improvements to determine their effectiveness in reducing runoff and improving water quality. They are listed in Section 6. As this watershed is highly urban and largely "built-out," we concentrated much of our research on identifying opportunities for retrofitting existing stormwater facilities and finding locations for new Stormwater Control Measures, or SCMs, in areas that are not currently served by stormwater facilities. Restoration of riparian stream buffers is recommended as an opportunity to address the goal of preserving and restoring flood carrying capacity of streams. We strongly endorse the use of stormwater SCMs as the preferred means to achieve improved water quality, groundwater recharge and retention, stream bank protection, and volume control. The implementation of these retrofits and new SCMs in conjunction with regulation of new development and redevelopment through new stormwater ordinances will reduce stormwater problems in the Wissahickon Creek Watershed. The plan encourages municipalities to construct the stormwater improvements over a ten-year period. The various improvements are assigned a priority according to their cost-effectiveness and capture potential, and municipalities can use this ranking as a basis for funding projects.

The final plan presents criteria and standards for new development and redevelopment in Section 5 and a model ordinance in Appendix A. Within six months of the adoption of the plan,

each municipality shall adopt or amend ordinances and regulations, including zoning, subdivision and development, building codes, and erosion and sedimentation ordinances, as are necessary to regulate development within the municipality in a manner consistent with the plan. The project team recommends that the municipalities adopt the model ordinance in its entirety as part of its zoning regulations. If the municipality lies in more than one watershed, the applicable criteria and standards should be identified for the different watersheds.

The Wissahickon Act 167 Stormwater Management Plan includes the Sandy Run Watershed as a component of the plan. A draft Act 167 plan for the Sandy Run Watershed was completed in 2010, but not adopted by Montgomery County or the Pennsylvania Department of Environmental Protection. The draft plan was evaluated by the research team as part of the planning process. The Wissahickon Plan updates the modeling and engineering for the Sandy Run Watershed and this new information and recommendations are included in this plan.

The Wissahickon Plan was prepared by Temple University's Center for Sustainable Communities (CSC) and NTM Engineering, Inc. The plan was funded by the Philadelphia Water Department and prepared in consultation with municipalities located in the watershed, working through a Watershed Plan Advisory Committee (WPAC) comprised of municipal officials and other interested parties. The plan provides uniform technical standards and criteria throughout the watershed for the management of stormwater runoff from new land development and redevelopment sites.

The plan consists of seven sections and four appendices:

- Section 1: Wissahickon Watershed Location
- Section 2: Watershed Characteristics and Runoff
- Section 3: Stormwater Problems
- Section 4: Model Development and Application
- Section 5: Criteria and Standards for New Development
- Section 6: Stormwater Improvements
- Section 7: Plan Implementation
- Appendix A: Model Ordinance
- Appendix B: Hydrologic Model Parameters and Release Rates
- Appendix C: Recommended Improvements
- Appendix D: Wissahickon Watershed Culverts

The Project Team and members of the Water Plan Advisory Committee follow. The team expresses its appreciation to Joanne Dahme, Marc Cammarata, and Sue Patterson of the Philadelphia Water Department for their oversight and technical support, and to Paul Racette of the Pennsylvania Environmental Council for his coordination of the work of the WPAC.

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Table i.1 Required Contents of Watershed Storm Water Plans Under Sections 5(b) and 5(c) of Act 167

Required Elements Under Section 5(b)	Location in Wissahickon Plan
(1) A survey of existing runoff characteristics in small as well as large storms, including the impact of soils, slopes, vegetation and existing development;	Section 2
(2) A survey of existing significant obstructions and their capacities;	Section 3, Appendix D
(3) An assessment of projected and alternative land development patterns in the watershed, and the potential impact of runoff quantity, velocity and quality;	Section 2
(4) An analysis of present and projected development in flood hazard areas, and its sensitivity to damages from future flooding or increased runoff;	Section 2, Section 3
(5) A survey of existing drainage problems and proposed solutions;	Section 3, Section 6, Appendix C
(6) A review of existing and proposed storm water collection systems and their impacts;	Section 2
(7) An assessment of alternative runoff control techniques and their efficiency in the particular watershed;	Section 6, Appendix C
(8) An identification of existing and proposed State, Federal and local flood control projects located in the watershed and their design capacities;	Section 4, Section 6, Appendix C
(9) A designation of those areas to be served by storm water collection and control facilities within a ten-year period, an estimate of the design capacity and costs of such facilities, a schedule and proposed methods of financing the development, construction and operation of such facilities, and an identification of the existing or proposed institutional arrangements to implement and operate the facilities;	Section 6, Section 7, Appendix C
(10) An identification of flood plains within the watershed;	Section 3
(11) Criteria and standards for the control of storm water runoff from existing and new development which are necessary to minimize dangers to property and life and carry out the purposes of this act;	Section 5, Appendix A
(12) Priorities for implementation of action within each plan; and	Section 6, Section 7
(13) Provisions for periodically reviewing, revising and updating the plan.	Section 7

Table i.1 Continued

Required Elements Under Section 5(c)	Location in Wissahickon Plan
(1) contain such provisions as are reasonably necessary to manage storm water such that development or activities in each municipality within the watershed do not adversely affect health, safety and property in other municipalities within the watershed and in basins to which the watershed is tributary; and	Section 5, Appendix A
(2) consider and be consistent with other existing municipal, county, regional and State environmental and land use plans.	Section 5, Section 7, Appendix A