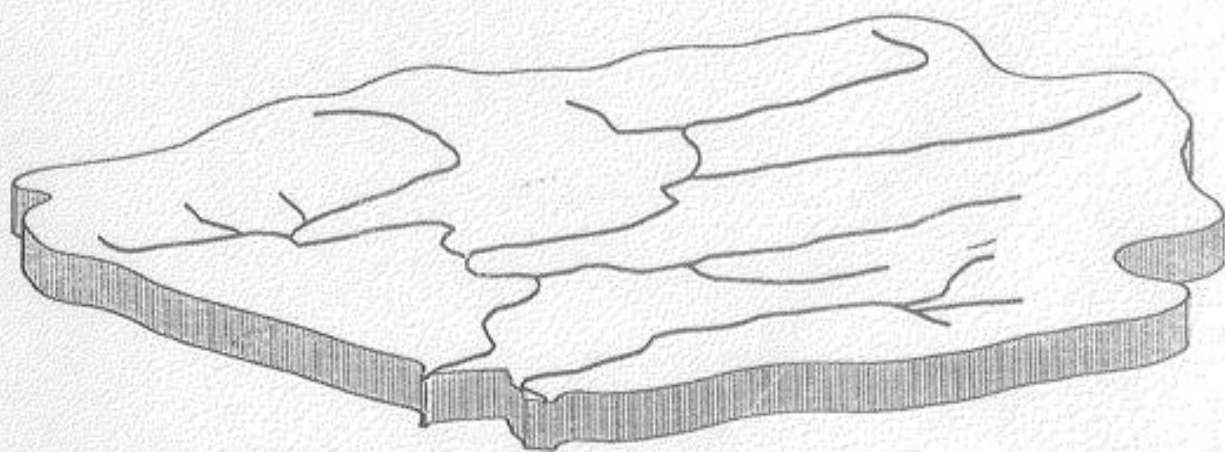


***STONY CREEK/SAW MILL RUN***  
***Act 167***  
***STORMWATER MANAGEMENT PLAN***  
***EXECUTIVE SUMMARY***



***Montgomery County, Pennsylvania***



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STONY CREEK/SAW MILL RUN  
WPAC

Watershed Planning Advisory Committee



East Norriton  
Lower Providence  
Norristown  
Plymouth  
West Norriton  
Whitpain  
Worcester

**EXISTING LAND USE**

**FUTURE LAND USE**

**RELEASE RATES**

**APPENDIX A**

# EXECUTIVE SUMMARY

## THE STONY CREEK/SAW MILL RUN STORMWATER MANAGEMENT PLAN

### State Mandate

Act 167, The Pennsylvania Stormwater Management Act of 1978, was passed in response to concerns over the loss of life and damage to property from flooding. At the time of the Act, many municipalities required some level of stormwater controls on new development sites. It was clear, however, that while the required stormwater facilities were controlling runoff on the individual development sites, the cumulative effects of the timing and volume of flows were not being addressed on a watershed-wide level.

The purpose of Act 167 is two-fold. The Act:

1. Encourages sound planning and management of storm runoff by municipalities, and
2. Coordinates the stormwater management efforts within each watershed at the local level.

The management and planning requirements of the Act mandate the administration of the stormwater management program by municipalities. However, the coordination requirement ensures that the focus of the program will extend beyond municipal boundaries; management of the stormwater flows created in a watershed will now occur on the watershed level.

Prior to Act 167, municipalities required conventional stormwater control in individual development projects. Conventional stormwater management strategies have had as their goal the control of the peak rate of runoff from a site. Volume control is secondary to rate control, if it exists at all. The result of this strategy is that the peak rate of runoff is controlled to pre-development peak levels. However, the volume of runoff has increased, due to increased impervious surfaces from development of the site. By reducing the post-development peak rate to pre-development levels, the time over which discharge of stormwater occurs at the peak rate is increased, due to the increased volume. As the extended peaks from different parts of the watershed converge in the mainstem, flooding results. This process is recognized in Act 167, and addressed by the comprehensive and coordinated strategy proposed in the Stony Creek/Saw Mill Run Plan.

### The Watershed

The Stony Creek/Saw Mill Run Watershed encompasses 24.8 square miles. The creeks themselves are the responsibility of the Commonwealth, and are considered to be part of the property of the riparian landowners. However, implementation of the stormwater plan is the responsibility of the municipalities. Seven municipalities are represented in the watershed, in whole or in part. Norristown Borough and Plymouth Township are at the mouth of the Stony Creek and the Saw Mill Run, respectively. East Norriton and West Norriton are located in the middle of the watershed, and Lower Providence, Worcester and Whitpain contain the



headwaters of these streams. Land use and zoning policy within these municipalities differs, as it does throughout the Commonwealth. Up to the time of this study, the strategy for controlling stormwater runoff from the development resulting from land use and zoning policies was also a function of individual, municipal action. Act 167 does not attempt to control zoning or land use within a watershed; individual municipalities will continue to plan and zone for future growth as before. However, the Act does require a comprehensive approach to stormwater management.

Act 167 provides for more comprehensive and coordinated management of stormwater flows from future development. The focus of the stormwater control strategy has moved from one dictated by political borders, to one encompassed by the natural boundary of the watershed. As a result, planning occurs on a watershed level, and stormwater flows are addressed within the entire drainage basin where they occur. Not only are the stormwater flows from individual development managed, but the effects of the management strategy on the downstream area are now considered as well.

### The Ordinance and Release Rates

The most important product of the planning process is the model stormwater ordinance. The plan itself, the computerized data base, and the material in the appendices are resources that provide support to the standards and criteria contained in the ordinance. Once adopted by the municipalities, the ordinance will implement these standards and criteria, effectively coordinating stormwater control efforts throughout the watershed.

The plan divides the watershed into over one hundred sub-watersheds. Information on location, acreage, land use, future land use, slope, soils and hydrology has been compiled for each sub-watershed. This information has been considered in the development of release rates, which are the essence of the control strategy contained in the ordinance. The release rate, expressed as a percentage of pre-development peak rate of flow, sets the level to which post-development stormwater runoff must be controlled. For example, a release rate of 80% would require that the post-development peak rate of flow would be controlled to a rate that is 80 percent of the pre-development peak rate of flow. The release rate strategy differs from conventional stormwater controls, in that the timing of the peak stormwater flow from a sub-watershed is analyzed as it passes downstream through the watershed.

The numerous peak rates of flow throughout the watershed are generated at different stages of the storm, and arrive at points in the watershed at different times. The Penn State Runoff Model, PSRM, enabled the flows generated in each sub-watershed to be tracked and timed through the watershed during a storm event. Using this information, the release rates go one step further than conventional control methods. After determining the contribution of each sub-watershed peak to the peak flow at a point of interest, the model generates the release rate figure. The release rate is set at a level that reduces the contribution of the sub-watershed to the peak flow at the point of interest, so that the combined flows do not result in an increase in flooding.

The stormwater management strategy developed in the plan provides for new development to occur while ensuring that existing drainage problems are not aggravated, nor new problems created. It will not, however, eliminate storm drainage problems or flooding. Through the development of the model ordinance and the release rates, future stormwater flows can be controlled to levels that will not exacerbate existing stormwater problem areas.

## The Watershed Planning Advisory Committee

Development of the ordinance and release rates alone is not sufficient to manage stormwater flows. The Act mandates the development of stormwater plans for watersheds by the County, and the implementation of those plans by municipalities. Unless the municipalities implement the standards and criteria of the plan, stormwater management will continue in its current piecemeal fashion. Realizing the importance of municipal cooperation in the development of the plan, and the critical role that municipalities will play in the implementation of the plan, the county formed the Watershed Planning Advisory Committee (WPAC) early on in the process. The municipalities were invited to appoint one or more representatives to serve on the WPAC; all but one municipality chose to participate.

Throughout the planning process, the WPAC was relied on as a source of information, and for the review of analysis results. The WPAC members also developed an understanding of stormwater management planning under Act 167. Through numerous meetings, a survey, and a review of municipal ordinances, the necessary data was acquired, analyzed and reviewed by the WPAC members. After the approval of the plan by PADER, and the adoption of the plan by the county, individual training sessions will be held with the municipalities. During these sessions, the municipalities will be instructed how to use the model, interpret the results, and review development proposals for compliance with the ordinance. The involvement of the county will not end with the approval of the plan either. First, the county will assist the municipalities in their review of stormwater plans from individual development projects. For example, the county will supply each municipality with a map of the watershed that shows the sub-areas and release rates, and coordinate with the municipalities on the assignment of a release rate to specific projects. In addition, because the plan is intended to be dynamic, periodic review and revision of the plan document will be orchestrated by the county.

## The Process

The formation of the WPAC, and the subsequent selection of the consulting firm of Roy F. Weston, Inc., were two important steps taken at the beginning of the stormwater management planning process for the Stony Creek/Saw Mill Run Watershed. The remainder of the planning process involved the following steps.

### Step 1: Data Collection/Review/Analysis

The information collected as part of this task includes:

Existing and Future Land Use	Stormwater Control Facilities
Municipal Ordinances	Geology, Soils, and Floodplains
Subdivision/Land Development Proposals	Topography
Existing Engineer and Planning Studies	Flood Control
Problem Areas and Obstructions	Water Quality

### **Step 2: Institutional Data Preparation**

The primary emphasis of this task was municipal ordinance evaluation and comparison. A matrix was completed which showed current levels of regulation in various municipal ordinances. This was used to identify areas where municipal ordinances overlap, conflict, or would need to be amended to comply with the stormwater plan.

### **Step 3: Data Preparation**

Several tasks were performed in this step. The information from Step 2 was formatted for use in later tasks, the sub-watersheds were designated based on problem areas, municipal boundaries and other points of interest, and the computer model of the watershed was prepared.

### **Step 4: Model Selection And Model Set Up**

The Penn State Runoff Model (PSRM) was selected and loaded with the data collected in previous tasks.

### **Step 5: Model Runs**

The computer model was run for 6 selected frequency storms and two land use scenarios. The resulting data provides the justification of the institutional products, including the release rates.

### **Step 6: Water Quality**

Potential pollution loadings were determined based on land cover and other criteria. Best Management Practices (BMPs) have been identified to improve stormwater quality.

### **Step 7: Technical Standards And Criteria:**

Standards and criteria (primarily the release rates) were developed to minimize the downstream impacts as identified from the model runs.

### **Step 8: Institutional Analysis:**

In this step, the ordinance provisions necessary to implement the standards and criteria were identified.

The materials resulting from the completion of these steps comprise the Stony Creek/Saw Mill Run Stormwater management plan. This plan will be used by developers, municipalities and the county to ensure that stormwater management facilities are developed to control stormwater on site, and prevent the aggravation of existing storm drainage problems in the watershed. The effectiveness of this plan will depend not only on the quality of the final product, but also on the adoption and implementation of the stormwater ordinance by each of the watershed municipalities.

Because of the importance of municipal actions in the success of this planning effort, the plan also provides guideline priorities for plan implementation. The plan recommends that the municipalities adopt the model ordinance itself, rather than amending existing ordinances to include the standards and criteria of the plan. Slight revision of the ordinance is, of course,



possible, to make the document compatible in form with other municipal ordinances. Revisions to other municipal ordinances are also suggested in the plan. For example, amendments to the BOCA Code, which addresses different aspects of stormwater management, are recommended. Another activity which is suggested is a stream corridor protection program, which could be implemented through municipal ordinance adoption. Finally, because there are economic concerns to be addressed, the plan indicates sources of funding for municipal stormwater management activities. The majority of the costs of implementing the Act 167 plan are eligible for reimbursement from the PADER.

The information gathered for the Stony Creek/Saw Mill Run Watershed covers a broad spectrum of topics, such as land use, geology, and water quality. All of this information is necessary in order to achieve the comprehensive and coordinated approach to stormwater management required by Act 167. The data lends support to the standards and criteria in the ordinance, as well as other recommendations of the plan. In addition, this information will be useful to planners of all levels, working on various projects within these municipalities. Therefore, an effort has been made to include much of the information compiled during the planning process in the appendices of the plan.