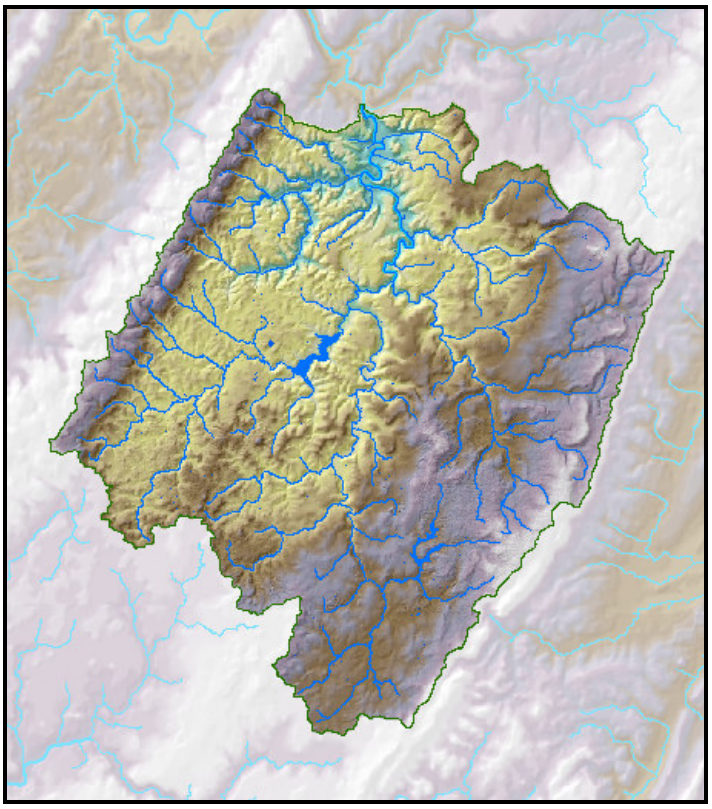
STONYCREEK RIVER WATERSHED
ACT 167 – PHASE 2
STORMWATER MANAGEMENT PLAN

VOLUME I - EXECUTIVE SUMMARY



CAMBRIA AND SOMERSET COUNTIES,
PENNSYLVANIA

BLE PROJECT NO. 2005-1719-00

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PLAN FORMAT

The format of the Stonycreek River Watershed Stormwater Management Plan consists of Volume I, the Executive Summary, Volume II, the Plan Report, and Volume III that contains the background technical materials.

Volume I provides an overview of Act 167 and a summary of the standards and criteria developed for the Plan. Volume II, the Plan Report, provides an overview of stormwater management, purpose of the study, data collection, all GIS maps, present conditions, projected land development patterns, calculation methodology, the Model Ordinance and implementation discussion.

Volume III provides supporting data, watershed modeling parameters and modeling runs, peak flows, release rates, the existing municipal ordinance matrix, and obstructions inventory. Due to large volumes of data, one copy of Volume III will be on file at each of the Cambria County Conservation District and the Somerset County Planning Commission offices.

I. INTRODUCTION

This Plan has been developed for the Stonycreek River watershed in Cambria and Somerset Counties, Pennsylvania to comply with the requirements of the Pennsylvania Stormwater Management Act, Act 167, of 1978. The outlet of the Stonycreek River watershed corresponds with the confluence of the Conemaugh River in Cambria County. In order to properly address stormwater management in the Stonycreek River watershed below the confluence of the Conemaugh River, it was determined that the watershed needed to be hydrologically evaluated in both counties. One Act 167 Plan was, therefore, developed encompassing both Cambria and Somerset Counties, thus satisfying the Act 167 planning requirements for the entirety of the Stonycreek River watershed. For the purposes of this report, when the combined counties in the single watershed are being formally referenced such as in section headings, the text used to refer to them will read the Stonycreek River watershed. Otherwise, they will be referenced individually when appropriate to do so.

The main objective of a stormwater management plan is to control stormwater runoff from new development on a watershed-wide basis rather than on a site-by-site basis, taking into account how development in any part of the watershed will affect stormwater runoff in all other parts of the watershed.

II. WATERSHED DESCRIPTION

As mentioned above, the Stonycreek River watershed encompasses portions of both Cambria and Somerset Counties. The majority of the watershed is located in Somerset County. The lower portion of the Stonycreek River watershed (approximately 1/5 of the watershed area) is located in southern Cambria County. The headwaters of the Stonycreek River are located at the northern corporate limits of Berlin Borough which is found in central Brothers Valley Township in Somerset County. The Stonycreek River flows north through Somerset County, into Cambria County where it eventually discharges into the Conemaugh River in Cambria County. The Stonycreek River watershed encompasses fifteen (15) municipalities in Cambria County and twenty-one (21) municipalities in Somerset County as follows:

Cambria County	
Adams Township	Lower Yoder Township
Conemaugh Township	Richland Township
Daisytown Borough	Scalp Level Borough
Dale Borough	Southmont Borough
Ferndale Borough	Stonycreek Township
Geistown Borough	Upper Yoder Township
Johnstown City	Westmont Borough
Lorain Borough	**Brownstown Borough Not in Watershed*
Somerset County	
Benson Borough	Lincoln Township
Berlin Borough	Ogle Township
Boswell Borough	Paint Borough
Brothers Valley Township	Paint Township
Central City Borough	Quemahoning Township
Conemaugh Township	Shade Township
Hooversville Borough	Shanksville Borough
Indian Lake Borough	Somerset Township
Jenner Township	Stonycreek Township
Jennerstown Borough	Stoystown Borough
	Windber Borough
	**Somerset Borough Not in Watershed*

Stonycreek River drains a total watershed area of approximately 469 square miles and includes the following major tributaries: Shade Creek, Bens Creek, Paint Creek, Quemahoning Creek, Dark Shade Creek, Beaverdam Creek, and Wells Creek. The Stonycreek River meanders from South to North with a total length of about 45 miles. The Watershed limits are located in the Cambria County portion of Johnstown City, where the Stonycreek River confluences with the Conemaugh River.

III. METHODOLOGY

The engineer for the project is Borton-Lawson Inc. The Plan was developed from data collected on the physical features of the watershed, such as soils, wetlands, topography, floodplains, dams and reservoirs, stream dimensions, and obstructions. Information on existing problem areas was solicited from the Watershed Planning Advisory Committee (WPAC) which consisted of representatives from the 36 municipalities as well as other interested parties including County Conservation Districts and others. Although the Plan can not solve all existing problems, knowing where and why they exist aided the engineer in developing the subwatersheds, identifying points of interests, and understanding the hydrologic characteristics of the watershed as a whole. Information on existing land use and zoning was also collected. This helped the engineer to determine where and to what extent future development would take place. All of this data was compiled into a geographic information system (GIS) database.

The computer model used for the project was the US Army Corps of Engineers Hydrologic Engineering Center Hydrologic Modeling System (HEC-HMS). This model was chosen for the project because it can be easily adapted to an urban and/or rural area, it has the ability to analyze reservoir or detention basin-routing effects, and it is accepted by the Department of Environmental Protection. To gain a realistic picture of what occurs in the Stonycreek River watershed, the model was calibrated against actual stream flow data, regression models, as well as data from the Federal Emergency Management Administration (FEMA) and the Army Corps of Engineers.

The process of determining how runoff flows throughout the watershed is a complex one. It involves running numerous scenarios through the model taking into account the location of stormwater problem areas, obstructions, and tributary confluences. This process produced a few large sub-basins, which were then further sub-divided. The most downstream point of each of these areas is considered a "point of interest" in which increased runoff must be analyzed for its potential impact.

Another aspect of the analysis involves modeling design storms. This term refers to assigning a frequency to a storm based on the amount of rain that falls over a 24-hour period. As the amount of rain falling over a 24-hour period increases, the frequency or chance of that storm occurring decreases. For this study, the 2-, 5-, 10-, 25-, 50-, and 100-year storms were modeled.

To make implementation of the Plan viable by the municipalities, a simple, but accurate method was developed for municipal officials, engineers and landowners and any person engaged in the alteration or development of land which may affect stormwater runoff characteristics to abide by the Plan. The watershed was divided into three (3) stormwater management districts and assigned the following proposed condition/existing condition runoff rates for each.

TABLE 1
Stormwater Management Districts in the Stonycreek River Watershed

District	Proposed Condition Design Storm	(reduce to)	Existing Condition Design Storm
A	2-year		1-year
	5-year		5-year
	10-year		10-year
	25-year		25-year
	50-year		50-year
	100-year		100-year
B-1	5-year		2-year
	10-year		5-year
	25-year		10-year
	50-year		25-year
	100-year		100-year
B-2	2-year		2-year
	25-year		10-year
	50-year		25-year
	100-year		100-year

All regulated activities not otherwise exempt from the Ordinance are required to implement water quality controls as defined by the Ordinance. Generally, they are as follows:

As outlined in Section 303, of the Model Ordinance the following requirements which satisfy the infiltration and water quality volume requirements, must be met:

Water volume controls shall be implemented using the *Design Storm Method* in Subsection 1 or the *Simplified Method* in Subsection 2 below. For Regulated Activity areas equal or less than 10,000 square feet that do not require hydrologic routing to design the stormwater facilities, the Ordinance establishes no preference for either methodology; therefore, the Applicant may select either methodology on the basis of economic considerations, the intrinsic limitations on applicability of the analytical procedures associated with each methodology, and other factors.

1. *The Design Storm Method* (CG-1 in the SWM Manual[1]) is applicable to any size of Regulated Activity. This method requires detailed modeling based on site conditions.

    a. Do not increase the post-development total runoff volume for all storms equal to or less than the 2-year 24-hour duration precipitation.

    b. For modeling purposes:

i. Existing (pre-development) non-forested pervious areas must be considered meadow or its equivalent.

ii. Twenty (20) percent of existing impervious area, when present, shall be considered meadow in the model for existing conditions.

2. *The Simplified Method* (CG-2 in the SWM Manual[1]) provided below is independent of site conditions and should be used if the Design Storm Method is not followed. This method is not applicable to Regulated Activities greater than 10,000 square feet or for projects that require design of stormwater storage facilities. For new impervious surfaces:

   a. Stormwater facilities shall capture at least the first two inches (2") of runoff from all new impervious surfaces.

   b. At least the first one inch (1.0") of runoff from new impervious surfaces shall be permanently removed from the runoff flow -- i.e. it shall not be released into the surface waters of this Commonwealth. Removal options include reuse, evaporation, transpiration, and infiltration.

   c. Wherever possible, infiltration facilities should be designed to accommodate infiltration of the entire permanently removed runoff; however, in all cases at least the first one-half inch (0.5") of the permanently removed runoff should be infiltrated.

   d. This method is exempt from the requirements of Section 304, Rate Controls.

3. Meet the water quality goals of the Ordinance by implementing measures to:

   a. Minimize disturbance to floodplains, wetlands, natural slopes over 8%, and existing native vegetation.

   b. Preserve and maintain trees and woodlands. Maintain or extend riparian buffers and protect existing forested buffer. Provide trees and woodlands adjacent to impervious areas whenever feasible.

   c. Establish and maintain non-erosive flow conditions in natural flow pathways.

   d. Minimize soil disturbance and soil compaction. Over disturbed areas, replace topsoil to a minimum depth equal to the original depth or 4 inches, whichever is greater. Use tracked equipment for grading when feasible.

   e. Disconnect impervious surfaces by directing runoff to pervious areas, wherever possible.

4. The Applicant must meet rate control criteria as specified in Section 304 of the Model Ordinance by satisfying the criteria specified in Table 1. The locations where the

management district criteria apply is shown on the Management District Map found in Appendix D of the Model Ordinance.

5. Activities that are exempt from certain requirements of the Ordinance as defined by the Ordinance are still encouraged to implement voluntary stormwater management.

IV. EXEMPTIONS

1. Exemptions for Land Cover Activities

The following land use activities are exempt from the drainage plan submission requirements of the Ordinance:

a. Regulated Activities that create impervious areas smaller than 500 sq. ft. are exempt from all requirements in the Ordinance.

b. Regulated Activities that create impervious areas equal to or greater than 500 sq. ft. and less than 5,000 sq. ft. are exempt from the Peak Rate Control and the SWM Site Plan preparation requirement of the Ordinance.

c. Regulated Activities that create impervious areas equal to or greater than 5,000 sq. ft. and less than 10,000 sq. ft. are exempt only from the peak rate control requirement of the Ordinance.

d. Agricultural activity is exempt from the rate control and SWM Site Plan preparation requirements of the Ordinance provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.

e. Forest management and timber operations are exempt from the rate control and SWM Site Plan preparation requirements of the Ordinance provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.

These criteria shall apply even if the development is to take place in phases. The date of the municipal Ordinance adoption shall be the starting point from which to consider tracts as "parent tracts" upon which future subdivisions and respective earth disturbance computations shall be cumulatively considered.

2. Additional Exemption Criteria

a. Exemption Responsibilities - An exemption shall not relieve the Applicant from implementing such measures as are necessary to protect public health, safety, and property.

b. HQ and EV Streams - An exemption shall not relieve the Applicant from meeting the

special requirements for watersheds draining to identified high quality (HQ) or exceptional value (EV) waters and Source Water Protection Areas (SWPA) and requirements for non-structural project design sequencing.

c. Drainage Problems - If a drainage problem is documented or known to exist downstream of or is expected from the proposed activity, then the Municipality may require the Applicant to comply with the Ordinance.

d. Even though the developer is exempt, he is not relieved from complying with other regulations.

V. NPDES REGULATIONS

New Federal regulations approved October 1999 require operators of small municipal separate storm sewer systems (MS4s) to obtain NPDES (National Pollutant Discharge Elimination System Phase II Stormwater Permitting Regulations.) Phase II permits from DEP March 2003. This program affects all municipalities in "urbanized areas" of the State. Therefore, all urbanized municipalities within the Stonycreek River watershed will be subject to the NPDES Phase II requirements, mandated by the Federal Clean Water Act as administered by DEP. For more information on NPDES II requirements, contact the DEP Regional Office.

VI. IMPLEMENTATION

All municipalities within the watershed will be required to adopt the Stonycreek River Stormwater Management Plan/Ordinance. The standards and criteria contained in the Ordinance will apply to municipalities located within the boundaries of the Stonycreek River watershed. In addition, for municipalities located both inside and outside of the Stonycreek River watershed boundary that are not covered by an already approved Act 167 stormwater management plan, Section 304.A. of the Ordinance will apply. The areas outside of the watershed will still be regulated by the municipality's Subdivision/Land Development Ordinance unless otherwise written so as to apply to other areas of the municipality.

County adoption of the Plan is expected to occur in July 2009. Once this occurs, the Plan will be sent to DEP to be approved. All of the municipalities will be required to adopt the Model Ordinance provisions within six (6) months of DEP approval.