CHAPTER 25

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CHAPTER 25

STORMWATER ORDINANCE

Part 1
General Provisions

§. Section 101. Short Title

This Ordinance shall be known and may be cited as the "White Haven Borough Stormwater Management Ordinance".

§. Section 102. Statement of Findings

The Council of White Haven Borough find that:

A. Inadequate management of accelerated runoff of stormwater resulting from development throughout a watershed increases flows and velocities, contributes to erosion and sedimentation, overtaxes the carrying capacity of streams and storm sewers, greatly increases the cost of public facilities to carry and control stormwater, undermines flood plain management and flood control efforts in downstream communities, reduces groundwater recharge, threatens public health and safety, and increases non-point source pollution of water resources.

B. A comprehensive program of stormwater management, including reasonable regulation of development and activities causing accelerated runoff, is fundamental to the public health, safety, and welfare and the protection of people of the Commonwealth, their resources, and the environment.

C. Stormwater is an important water resource, which provides groundwater recharge for water supplies and base flow of streams, which also protects and maintains surface water quality.

D. Federal and state regulations require certain municipalities to implement a program of stormwater controls. These municipalities are required to obtain a permit for stormwater discharges from their separate storm sewer systems under the National Pollutant Discharge Elimination System (NPDES).

§. Section 103. Purpose

The purpose of this Ordinance is to promote health, safety, and welfare within White Haven Borough and its watershed by minimizing the harms and maximizing the benefits described in Section 102 of this Ordinance, through provisions designed to:

A. Meet legal water quality requirements under state law, including regulations at 25 Pa. Code 93 to protect, maintain, reclaim, and restore the existing and designated uses of the waters of this Commonwealth.

B. Preserve the natural drainage systems as much as possible.

C. Manage stormwater runoff close to the source.

D. Provide procedures and performance standards for stormwater planning and management.

E. Maintain groundwater recharge to prevent degradation of surface and groundwater quality and to otherwise protect water resources.

F. Prevent scour and erosion of stream banks and streambeds.

G. Provide proper operation and maintenance of all permanent SWM BMPs that are implemented within White Haven Borough.

H. Provide standards to meet NPDES permit requirements.

I. Prevent flooding and erosion on properties adjacent to earth disturbance activities.

§. Section 104. Statutory Authority

A. Primary Authority:

White Haven Borough is empowered to regulate these activities by the authority of the Act of October 4, 1978, P.L. 864 (Act 167), 32 P.S. Section 680.1, et seq., as amended, the "Storm Water Management Act" and, Act of May 1, 1933 (P.L. 103, No. 69) reenacted and amended November 9, 1995 (P.L. 350, No. 60, as amended) the "Pennsylvania Second Class Borough Code".

B. Secondary Authority:

White Haven Borough also is empowered to regulate land use activities that affect runoff by the authority of the Act of July 31, 1968, P.L. 805, No. 247, The Pennsylvania Municipalities Planning Code, as amended.

§. Section 105. Applicability

A. All regulated activities and all activities that may affect stormwater runoff, including land development and earth disturbance activity, are subject to regulation by this Ordinance. Regulated activities include but are not limited to: the clearing and grubbing of wooded areas, grading and excavating, placement of pavement (driveways, parking areas, roads), construction of buildings, construction of new stormwater management facilities, diversion or piping of any natural or man-made stream channel, the construction of other structures (homes, sheds, garages, commercial and industrial buildings), and other activities which alter the way stormwater runs off of the landscape. Depending on the amount of impervious area placed and the amount of earth disturbance to the project site, this Ordinance requires different levels of stormwater management, and correspondingly different levels of design and review.

B. Pennsylvania Department of Transportation (PennDOT) roadway projects will perform stormwater management consistent with Publication 13M (Design Manual-2) Chapter 13.6 Antidegradation and Post Construction Stormwater Management Policy.

§. Section 106. Repealer

Any other ordinance provision or regulation of the Borough inconsistent with any of the provisions of this Ordinance is hereby repealed to the extent of the inconsistency only.

§. Section 107. Severability

In the event that a court of competent jurisdiction declares any section or provision of this Ordinance invalid, such decision shall not affect the validity of any of the remaining provisions of this Ordinance.

§. Section 108. Compatibility with Other Requirements

A. Approvals issued and actions taken under this Ordinance do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other code, law, regulation, or ordinance.

B. The standards and criteria in this Ordinance supersede the standards and criteria in the previously enacted White Haven Borough Stormwater Management Ordinance.

C. White Haven Borough shall be responsible for administering this Ordinance.

ORDINANCE NO. 6 of 2013

AN ORDINANCE OF WHITE HAVEN BOROUGH, LUZERNE COUNTY, PENNSYLVANIA, AMENDING CHAPTER 26, SUBDIVISION AND LAND DEVELOPMENT, PART 2, DEFINITIONS, THE TERM SUBDIVISION TO REDUCE THE NUMBER OF LOTS QUALIFYING AS A MAJOR SUBDIVISION TO MORE THAN FIVE AND EXEMPTING LOT CONSOLIDATIONS OF FIVE OR LESS CONTIGUOUS LOTS FROM REQUIRING FORMAL SUBDIVISION APPROVAL

BE IT ENACTED AND ORDAINED by White Haven Borough Council and it is hereby enacted and ordained by the authority of Borough Council, an amendment to the term Subdivision (Minor) under Section 201(66)(B) of the White Haven Borough Code of Ordinances (Subdivision and Land Development Ordinance) to read as follows:

Part 2
Definitions

§201. General Interpretation.

(66)(B) Subdivision (Minor). A subdivision of a parcel of land into not more than five (5) lots, which has access, direct or indirect, onto an existing public street, not involving the extension thereof, the extension of municipal facilities, the creation of any public improvements and not adversely affecting the remainder of the parcel of adjoining property. However, if a lot consolidation is proposed of five (5) contiguous lots or less totaling not more than five (5) acres in size after consolidation, then the Borough shall exempt an applicant from the subdivision process if the applicant agrees in writing to pay all reasonable review fees incurred by the Borough and the applicant can produce the following documents to the satisfaction of Council: (1) A recorded deed for each of the existing parcels to be combined; (2) A certified property outbound survey or legal description and illustration prepared by a Professional Land Surveyor licensed in the Commonwealth of Pennsylvania for the combined parcel; and (3) A deed in recordable form containing the legal description prepared by a Professional Land Surveyor licensed in the Commonwealth of Pennsylvania for the combined parcel and also containing any additional language that may be required by Luzerne County at the time of filing of the new deed. Once approved by Council, the applicant shall record the new deed within 90 days from the date of the approval. A failure by the applicant to record the deed within the 90 days unless extended by written approval of Borough Council will result in the approval being void.

NOW THEREFORE, this amendment to the White Haven Borough Subdivision and Land Development Ordinance is hereby enacted and becomes effective this 23 day of September, 2013.

ATTEST:

Manager

White Haven Borough Council:

President

Part 2
Definitions

For the purposes of this Ordinance, certain terms and words used herein shall be interpreted as follows:

A. Words used in the present tense include the future tense; the singular number includes the plural, and the plural number includes the singular; words of masculine gender include feminine gender; and words of feminine gender include masculine gender.

B. The word "includes" or "including" shall not limit the term to the specific example but is intended to extend its meaning to all other instances of like kind and character.

C. The words "shall" and "must" are mandatory; the words "may" and "should" are permissive.

Agricultural Activity - Activities associated with agriculture such as agricultural cultivation, agricultural operation, and animal heavy use areas. This includes the work of producing crops including tillage, land clearing, plowing, disking, harrowing, planting, harvesting crops or pasturing and raising of livestock and installation of conservation measures. Construction of new buildings or impervious area is not considered an agricultural activity.

Applicant - A landowner, developer, or other person who has filed an application to White Haven Borough for approval to engage in any regulated activity at a project site in White Haven Borough.

Best Management Practice (BMP) - Activities, facilities, designs, measures, or procedures used to manage stormwater impacts from regulated activities, to meet state water quality requirements, to promote groundwater recharge, and to otherwise meet the purposes of this Ordinance. Stormwater BMPs are commonly grouped into one of two broad categories or measures: "structural" or "nonstructural." In this Ordinance, nonstructural BMPs or measures refer to operational and/or behavior-related practices that attempt to minimize the contact of pollutants with stormwater runoff whereas structural BMPs or measures are those that consist of a physical device or practice that is installed to capture and treat stormwater runoff. Structural BMPs include, but are not limited to, a wide variety of practices and devices, from large-scale retention ponds and constructed wetlands, to small-scale underground treatment systems, infiltration facilities, filter strips, low impact design, bioretention, wet ponds, permeable paving, grassed swales, riparian or forested buffers, sand filters, detention basins, and manufactured devices. Structural stormwater BMPs are permanent appurtenances to the project site.

Capture - The process of collecting runoff to be managed by a stormwater BMP.

Conservation District - A conservation district, as defined in Section 3(c) of the Conservation District Law (3 P. S. § 851(c)) that has the authority under a delegation agreement executed with DEP to administer and enforce all or a portion of the

regulations promulgated under 25 Pa. Code 102; refers to the Luzerne Conservation District unless otherwise noted.

Design Storm - The magnitude and temporal distribution of precipitation from a storm event measured in probability of occurrence (e.g., a 5-year storm) and duration (e.g., 24 hours) used in the design and evaluation of stormwater management systems. Also see Return Period.

Detention Volume - The volume of runoff that is captured and released into the waters of this Commonwealth at a controlled rate.

DEP - The Pennsylvania Department of Environmental Protection.

Development, Land - See "Land Development".

Development, Site - Any human-induced change to improved or unimproved real estate, whether public or private, including, but not limited to, land development, construction, installation, or expansion of a building or other structure, land division, street construction, drilling, and site alteration such as embankments, dredging, grubbing, grading, paving, parking or storage facilities, excavation, filling, stockpiling, or clearing.

Disconnected Impervious Area (DIA) - An impervious or impermeable surface that is disconnected from any stormwater drainage or conveyance system and is redirected or directed to a pervious area, which allows for infiltration, filtration, and increased time of concentration as specified in Appendix B, Disconnected Impervious Area.

Disturbed Area - An unstabilized land area where an earth disturbance activity is occurring or has occurred.

Earth Disturbance Activity - A construction or other human activity which disturbs the surface of the land, including, but not limited to: grubbing; grading; excavations; embankments; road maintenance; building construction; and the moving, depositing, stockpiling, or storing of soil, rock, or earth materials. The clearing of vegetation without disturbance of the land shall not be considered an earth disturbance activity.

Erosion - The natural process by which the surface of the land is worn away by water, wind, or chemical action.

Existing Condition - The dominant land cover during the 5-year period immediately preceding a proposed regulated activity.

FEMA - Federal Emergency Management Agency.

Floodplain - Any land area susceptible to inundation by water from any natural source or delineated by applicable FEMA maps and studies as being a special flood hazard area. Also includes areas that comprise Group 13 Soils, as listed in Appendix

A of the Pennsylvania DEP Technical Manual for Sewage Enforcement Officers (as amended or replaced from time to time by DEP).

Floodway - The channel of the watercourse and those portions of the adjoining floodplains that are reasonably required to carry and discharge the 100-year flood. Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by FEMA. In an area where no FEMA maps or studies have defined the boundary of the 100-year floodway, it is assumed, absent evidence to the contrary, that the floodway extends from the stream to 50 feet from the top of the bank of the stream.

Forest Management/Timber Operations - Planning and activities necessary for the management of forestland. These include conducting a timber inventory, preparation of forest management plans, silvicultural treatment, cutting budgets, logging road design and construction, timber harvesting, site preparation, and reforestation.

Geotextile - A porous fabric manufactured from synthetic fiber that is used to provide separation between different types of media (i.e., between soil and stone).

Gravel (Crushed Stone) - Considered to be impervious when the intended use of the stone is for transportation purposes, parking areas, construction areas, trails, or if the gravel is compacted at any time during or after its placement; landscaping stone is not considered as impervious area.

Hotspot - Areas where land use or activities generate highly contaminated runoff, with concentrations of pollutants that are higher than those that are typically found in stormwater (e.g., vehicle salvage yards and recycling facilities, vehicle fueling stations, fleet storage areas, vehicle equipment and cleaning facilities, and vehicle service and maintenance facilities).

Hydrologic Soil Group (HSG) - Infiltration rates of soils vary widely and are affected by subsurface permeability as well as surface intake rates. Soils are classified into four HSGs (A, B, C, and D) according to their minimum infiltration rate, which is obtained for bare soil after prolonged wetting. The NRCS defines the four groups and provides a list of most of the soils in the United States and their group classification. The soils in the area of the development site may be identified from a soil survey report that can be obtained from local NRCS offices or conservation district offices. Soils become less pervious as the HSG varies from A to D (NRCS [3,4]).

Impervious Surface (Impervious Area) - A permanent surface that prevents the infiltration of water into the ground. Impervious surfaces include, but are not limited to, streets, sidewalks, pavements, parking lots, driveways, roofs, stone patios. See definition of "Gravel (Crushed Stone)" for when gravel classifies as impervious area.

Infiltration - Movement of surface water into the soil, where it is absorbed by plant roots, evaporated into the atmosphere, or percolated downward to recharge groundwater.

Karst - A type of topography or landscape characterized by surface depressions, sinkholes, rock pinnacles/uneven bedrock surface, underground drainage, and caves. Karst is formed on carbonate rocks, such as limestone or dolomite.

Land Development (Development) – (1) A subdivision of land; (2) The improvement of one lot or two or more contiguous lots, tracts or parcels of land for any purpose involving:

A. A group of two or more residential or nonresidential buildings, whether proposed initially or cumulatively, or a single nonresidential building on a lot or lots regardless of the number of occupants or tenure; or,
B. The division or allocation of land or space, whether initially or cumulatively, between or among two or more existing or prospective occupants by means of, or for the purpose of, streets, common areas, leaseholds, condominiums, building groups or other features.

The definition of land development **shall** also include the expansion or addition to a nonresidential building which involves any of the following as measured cumulatively from the effective date of this provision:

A. The addition of twenty-five (25) percent or more of floor area to the structure; or,
B. The increase by twenty-five (25) percent or more of impervious area (including building area) on the parcel; or,

C. Any increase in impervious area which will result in the generation of storm water in such volume as will not be controlled by existing storm water facilities pursuant to the requirements of this Ordinance.

The definition of land development **shall not** include the following:

A. The conversion of an existing single-family detached dwelling or single-family semi-detached dwelling into not more than two (2) residential units, unless such units are intended to be a condominium.
B. The addition of an accessory residential building, including farm buildings and sheds, on a lot or lots subordinate to an existing principal residential building.

Low Impact Development - A land development and construction approach that uses various land planning, design practices, and technologies to simultaneously

conserve and protect natural resource systems, while allowing for necessary infrastructure improvements associated with land development.

Municipality – White Haven Borough, Luzerne County, Pennsylvania.

NRCS - USDA Natural Resources Conservation Service (previously SCS).

Peak Discharge - The maximum rate of stormwater runoff from a specific storm event.

Permanent – Existing or intended to exist for an indefinite period of time. For purposes of this Ordinance any structure is considered a permanent structure if the structure is intended to exist for a time period of 180 days or longer.

Pervious Area - Any area not defined as impervious.

Project Site - The specific area of land where any regulated activities in White Haven Borough are planned, conducted, or maintained.

Qualified Professional - Any person licensed by the Pennsylvania Department of State or otherwise qualified by law to perform the work required by the Ordinance.

Redevelopment - Any development that requires demolition or removal of existing structures or impervious surfaces at a site and replacement with new impervious surfaces. Maintenance activities such as top-layer grinding and re-paving are not considered to be redevelopment unless the resurfacing results in a discernable change in the existing stormwater runoff discharge point. Interior remodeling projects and tenant improvements are also not considered to be redevelopment.

Regulated Activities - Any earth disturbance activities or any activities that involve the alteration or development of land in a manner that may affect stormwater runoff. The installation of a new stormwater management facility shall be considered a regulated activity of this Ordinance regardless of the amount of earth disturbance associated with the installation of the facility. See Section 105 of this Ordinance for additional detail on Regulated Activities.

Regulated Earth Disturbance Activity - Activity involving earth disturbance subject to regulation under 25 Pa. Code 92, 25 Pa. Code 102, or the Clean Streams Law.

Retention Volume/Removed Runoff - The volume of runoff that is captured and not released directly into the surface waters of this Commonwealth during or after a storm event.

Return Period - The average interval, in years, within which a storm event of a given magnitude can be expected to occur one time. For example, the 25-year return period rainfall would be expected to occur on average once every 25 years; or stated

in another way, the probability of a 25-year storm occurring in any one year is 0.04 (i.e., a 4% chance).

Runoff - Any part of precipitation that flows over the land.

Sediment - Soils or other materials transported by surface water as a product of erosion.

State Water Quality Requirements - The regulatory requirements to protect, maintain, reclaim, and restore water quality under Title 25 of the Pennsylvania Code and the Clean Streams Law.

Stormwater - Drainage runoff from the surface of the land resulting from precipitation or snow or ice melt.

Stormwater Management Facility - Any permanent structure, natural or man-made, that, due to its condition, design, or construction, conveys, stores, or otherwise affects stormwater runoff. Typical stormwater management facilities include, but are not limited to: detention and retention basins; open channels; storm sewers; pipes; French drains; underground on-lot seepage pits (dry wells); roof drains; sump pump discharge piping; foundation drains; and infiltration facilities.

Stormwater Management Plan - The Luzerne County Stormwater Management Plan for managing stormwater runoff adopted by the County of Luzerne as required by the Act of October 4, 1978, P.L. 864, (Act 167), as amended, and known as the "Storm Water Management Act."

Stormwater Management Best Management Practices - Is abbreviated as **BMPs** or **SWM BMPs** throughout this Ordinance.

Stormwater Management Site Plan - The plan prepared by the developer or his representative indicating how stormwater runoff will be managed at the development site in accordance with this Ordinance. **Stormwater Management Site Plan** will be designated as **SWM Site Plan** throughout this Ordinance.

Structure – Any man made object constructed or erected and having an ascertainable stationary location on or in land or water, whether or not affixed to the land.

Subdivision - As defined in The Pennsylvania Municipalities Planning Code, Act of July 31, 1968, P.L. 805, No. 247.

USDA - United States Department of Agriculture.

Void Ratio - The ratio of the volume of void space to the total volume of the BMP material (void space plus solid material / media providing structural support to create the storage area).

Waters of this Commonwealth - Any and all rivers, streams, creeks, rivulets, impoundments, ditches, watercourses, storm sewers, lakes, dammed water, wetlands, ponds, springs, and all other bodies or channels of conveyance of surface and underground water, or parts thereof, whether natural or artificial, within or on the boundaries of this Commonwealth.

Watershed - Region or area drained by a river, watercourse, or other surface water of this Commonwealth.

Wetland - Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, and similar areas.

Part 3
Stormwater Management Standards

§. Section 301. General Requirements (Level 1 – Level 4)

A. For all regulated activities **(Level 1 – Level 4)**, submission of the Stormwater Management Permit Application provided in Ordinance Appendix B is required. No regulated activity associated with a **Level 1 – Level 3** application shall commence unless a Stormwater Management Permit Application is approved by White Haven Borough.

B. For all regulated activities, unless preparation of a SWM Site Plan is specifically exempted in Section 302:

1. Preparation and implementation of an approved SWM Site Plan is required. A SWM Site Plan is required for a **Level 4** application only.

2. No regulated activities shall commence until White Haven Borough issues written approval of a SWM Site Plan, which demonstrates compliance with the requirements of this Ordinance.

C. SWM Site Plans approved by White Haven Borough, in accordance with Section 406, shall be on site throughout the duration of the regulated activity.

D. White Haven Borough may approve measures for meeting the state water quality requirements other than those in this Ordinance, provided that they meet the minimum requirements of, and do not conflict with, state law including, but not limited to, the Clean Streams Law.

E. For all regulated earth disturbance activities, erosion and sediment control BMPs shall be designed, implemented, operated, and maintained during the regulated earth disturbance activities (e.g., during construction) to meet the purposes and requirements of this Ordinance and to meet all requirements under Title 25 of the Pennsylvania Code and the Clean Streams Law. Various BMPs and their design standards are listed in the *Erosion and Sediment Pollution Control Program Manual* (E&S Manual)[2], No. 363-2134-008 (April 15, 2000), as amended and updated.

F. For **Level 3 and Level 4** applications, implementation of the volume controls in Section 303 is required. For **Level 2** applications implementation of the volume controls of Appendix E is required unless the Disconnected Impervious Area (DIA) requirements of Appendix C.1 are implemented or the subject lot is associated with an existing approval as described in Section 105.C.

G. Impervious areas:

1. The measurement of impervious areas shall include all of the impervious areas in the total proposed development even if development is to take place in stages.

2. For development taking place in stages, the entire development plan must be used in determining conformance with this Ordinance.

3. For projects that add impervious area to a parcel, only the proposed impervious area on the parcel must be considered and summed to determine the plan preparation and approval requirements of this Ordinance.

4. For redevelopment projects in which the existing site is disturbed, the entire proposed site is subject to the plan preparation and approval requirements of this Ordinance. Existing conditions are considered to be the existing site immediately prior to disturbance, and 20% of the existing impervious area must be considered as meadow in good condition for all stormwater calculations. For redevelopment projects in which the existing site is already controlled by a stormwater management facility, the requirement to consider 20% of existing impervious area as meadow is waived, provided the existing facility meets the water quality, volume, and peak rate standards and criteria of this Ordinance.

H. Stormwater flows onto adjacent property shall not be created, increased, decreased, relocated, or otherwise altered without written permission of the adjacent property owner(s). Such stormwater flows shall be subject to the requirements of this Ordinance. If written permission cannot be obtained from the adjacent property owner (proof must be submitted that the applicant attempted to obtain written permission) the applicant must successfully demonstrate that the proposed discharge:

1. Qualifies for a "Common Law Flowage Easement" as defined by Pennsylvania courts. Pennsylvania courts have upheld a common law right to discharge stormwater to adjoining properties downstream "because water is descendible by nature, the owner of the dominant or superior heritage has an easement in the servient or inferior tenement for the discharge of all waters which by nature rise in or flow or fall upon the superior". To qualify for a "Common Law Flowage Easement", as defined by this Ordinance, the applicant must demonstrate that the discharge will not result in a significant increase in volume of stormwater on the downstream property, will not create a channel for the water to flow where it does not flow naturally, and also provide evidence that all attempts to obtain written permission of the downstream property owner have failed.

2. Will not cause accelerated erosion or damage to the proposed flow area and/or adjoining properties. The applicant must utilize methods recommended by PA DEP to demonstrate that erosion and damage will not occur on adjoining properties.

3. Shall be located at least 20 feet from the downstream property line of the subject property.

I. All regulated activities shall include measures to:

1. Protect health, safety, and property;

2. Meet the water quality goals of this Ordinance by implementing measures outlined in the *Pennsylvania Stormwater Best Management Practices Manual* (BMP Manual)[1] to:

a. Minimize disturbance to floodplains, wetlands, and wooded areas.

b. Maintain or extend riparian buffers.

c. Avoid erosive flow conditions in natural flow pathways.

d. Minimize thermal impacts to waters of this Commonwealth.

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

3. To the maximum extent practicable, incorporate the techniques for Low Impact Development Practices described in the BMP Manual[1].

J. The design of all facilities over karst and mined areas shall include an evaluation of measures to minimize adverse effects.

K. Infiltration BMPs should be spread out, made as shallow as practicable, and located to maximize use of natural on-site infiltration features while still meeting the other requirements of this Ordinance.

L. Storage facilities, to the greatest extent possible and at the discretion of the White Haven Borough Engineer, shall completely drain both the volume control and rate control capacities over a period of time not less than 24 hours and not more than 72 hours from the end of the design storm.

M. Storage facilities shall incorporate features to maximize the length of the flow path and increase the travel time through the facility.

N. The design storm volumes to be used in the analysis of peak rates of discharge should be obtained from the Precipitation-Frequency Atlas of the United States, Atlas 14, Volume 2, Version 3.0, U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Spring, Maryland. NOAA's Atlas 14 can be accessed at: http://hdsc.nws.noaa.gov/hdsc/pfds/.[5]

O. For all regulated activities, SWM BMPs shall be designed, implemented, operated, and maintained to meet the purposes and requirements of this Ordinance and to meet all requirements under Title 25 of the Pennsylvania Code, the Clean Streams Law, and the Storm Water Management Act.

P. Various BMPs and their design standards are listed in the BMP Manual[1].

Q. Sump Pump Drains, Roof Drains and Foundation Drains

1. All drains shall connect to an existing infiltration or vegetative BMP if a BMP exists within the subject property outbound. If a drain is to be connected to a proposed underground infiltration BMP evidence must be submitted to the Borough that the existing soil in the area of the proposed BMP is suitable for infiltration.

2. If an infiltration or vegetative BMP does not exist within the subject property outbound all drains should be directed to a Borough roadside swale if a swale exists adjacent to a roadway and positive drainage can be achieved. If a swale does not existing adjacent to a Borough roadway and no other acceptable discharge can be achieved on the property the discharge point of the drain shall be a minimum of 15 feet (20 feet may be required to comply with DIA requirements) from the shoulder of the Borough roadway and shall be on a pervious ground surface to minimize the possibility of the freezing of water on the roadway in the winter months.

3. Discharges to wetland areas are encouraged however the discharge shall be a minimum of 5 feet from the wetland boundary to avoid the requirement of state or federal permitting and to avoid the inundation of the drain outfall.

4. Sump pump discharges shall be a minimum of 10 feet from the foundation of the building from where the water is being pumped out to prevent the recycling of water back into the foundation drains of the building.

5. All drain outlets shall be a minimum of 20 feet from any property line with the exception of the front property line.

6. The isolation distances of Section 301.Q may be slightly modified at the discretion of the Borough Engineer if the applicant can demonstrate that no adverse downstream stormwater impact is being created or worsened.

§. Section 302. Exemptions

A. Regulated activities that create impervious areas or earth disturbance shall adhere to Table III.1 to meet the requirements of this Ordinance. The larger of the two areas determines the applicable requirements of this Ordinance (i.e. if only 500 sq. ft. of impervious area is proposed, but 15,000 sq. ft. of earth disturbance, the requirements follow row 3 of Table III.1).

Table III.1. Stormwater Management Requirements and Exemptions.

Proposed Impervious Area (sq. ft.)	Proposed Total Earth Disturbance (sq. ft.)	Ordinance Exemptions	Stormwater Management Requirements	What is required to submit to municipality?*
250 to 1,000	500 to 5,000	Section 303, Section 304, and Article IV of this Ordinance	**LEVEL #1:** Ensure Section 301. General Requirements are met	Sketch
1,000 to 5,000	5,000 to 10,000	Section 303, Section 304, and Article IV of this Ordinance	**LEVEL #2:** Disconnected Impervious Area (DIA) as in Ordinance Appendix C.1	Ordinance Appendix C.1 Worksheet and Sketch
			OR	OR
			LEVEL #2: Capture and control first 1 inch of runoff over proposed impervious areas as in Ordinance Appendix E	Ordinance Appendix E Worksheet and Sketch
5,000 to 10,000**	10,000 to 20,000**	Section 304 and Article IV of this Ordinance	**LEVEL #3:** Capture and permanently remove the first 2 inches of runoff over proposed impervious areas as in Section 303 B. of this Ordinance	Ordinance Appendix D Worksheet and Sketch
> 10,000	> 20,000	None	**LEVEL #4:** All requirements of this Ordinance	SWM Site Plan

*In addition to the Stormwater Management Permit Application provided in Ordinance Appendix B
** Regardless of the proposed amount of impervious area and earth disturbance all Land Developments shall require a **Level #4** application
*** For Level #2 applications for existing lots governed by previous approvals see Section 105.C

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

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

D. Exemptions from any provisions of this Ordinance shall not relieve the applicant from the requirements in Sections 301.A. through Q. (i.e., If an applicant proposes an impervious area less than 250 sq. ft. or an earth disturbance of less than 500 sq. feet although there is no formal submittal required by the Borough it is the applicants responsibility to comply with Section 301 of this Ordinance.)

§. Section 303. Volume Controls (Level 3 – Level 4)

The low impact development practices provided in the BMP Manual[1] shall be utilized for all regulated activities to the maximum extent practicable. Water volume controls shall be implemented using the *Design Storm Method* in Subsection A or the *Simplified Method* in Subsection B below. For all regulated activities that require

submission of a formal SWM Site Plan, both the *Design Storm Method* and the *Simplified Method* shall be calculated; the larger control volume based on the two calculations shall be controlled. Subsection C below provides requirements for mined, karst, or other geologically limiting areas where infiltration shall not occur.

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

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

   2. For modeling purposes:

      a. Existing (predevelopment) non-forested pervious areas must be considered meadow or its equivalent.

      b. 20% of existing impervious area, when present, shall be considered meadow in the model for existing conditions.

B. When *Design Storm* Method CG-1 guidelines are not used, the *Simplified Method* (CG-2 in the BMP Manual[1]) has been modified to accommodate 2" of permanently removed runoff volume. This method (provided below) is independent of site conditions and should be used if the *Design Storm Method* is not followed. For new impervious surfaces:

   1. The first 2 inches 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.

   2. Wherever possible, infiltration facilities should be designed to accommodate infiltration of the entire permanently removed runoff; however, in all cases at least the first 0.5 inch of the permanently removed runoff should be infiltrated.

   3. Facilities, to the greatest extent possible and subject to the Borough Engineer's discretion, shall be designed to drain the permanently removed runoff volume in a period no less than 24 hours and no greater than 72 hours.

   4. Runoff volume in excess of 2 inches shall be safely conveyed to existing stormwater collection systems or streams, in the direction of the existing drainage course.

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

C. Before infiltration is proposed on a site, site conditions shall be evaluated by a qualified design professional through subsurface investigation and testing to determine if site conditions are suitable to support proposed infiltration facilities to manage runoff. If it is determined that infiltration is not feasible due to physical constraints of the site, or will adversely impact the environment as demonstrated by the presence of acid mine drainage, sinkhole formation, or other serious environmental issues, then the above volume controls must be achieved through surface BMP mitigation. Reference the BMP Manual[1] for alternative mitigation measures that do not require infiltration.

§. Section 304. Rate Controls (Level 4)

A. Areas not covered by a Stormwater Management District Map contained in Appendix F.1 of the Ordinance:

Post-development discharge rates shall not exceed the predevelopment discharge rates for the 1- through 100-year, 24-hour storms. If it is shown that the peak rates of discharge indicated by the post-development analysis are less than or equal to the peak rates of discharge indicated by the predevelopment analysis for 1- through 100-year, 24-hour storms, then the requirements of this section have been met. Otherwise, the applicant shall provide additional controls as necessary to satisfy the peak rate of discharge requirement.

B. Areas covered by a Stormwater Management District Map contained in Appendix F.1 of the Ordinance:

For the 1- through 100-year storms, the post-development peak discharge rates will follow the Lehigh River Watershed Stormwater Management District Map. For any areas not shown on the Lehigh River Watershed Stormwater Management District Map, the post-development discharge rates shall not exceed the predevelopment discharge rates.

§. Section 305. Additional Design Criteria of Stormwater Management Facilities associated with a SWM Site Plan (Level 4)

A. Any stormwater management facility located with a state highway rights-of-way shall be subject to approval by the Pennsylvania Department of Transportation.

B. Any facilities that constitute water obstructions (e.g., culverts, bridges, outfalls, or stream enclosures), and any work involving wetlands as directed in PA DEP Chapter 105 Regulations, as amended, shall be designed in accordance with Chapter 105 and will require a permit from PA DEP. Any facility that constitutes a dam as defined in PA DEP Chapter 105 Regulations may require a permit under dam safety regulations.

C. Any stormwater conveyance facility that does not fall under Chapter 105 Regulations must be able to convey, without damage to the drainage structure or roadway, runoff from the 25-year design storm. Stormwater conveyance facilities outleting from stormwater management detention/infiltration facility shall be designed to convey the 100-year design flow from that structure. Roadway crossings located within designated floodplain areas must be able to convey runoff from a 100-year design storm.

D. Storm sewers must be able to convey post-development runoff from a 25-year design storm without surcharging inlets, where appropriate. No storm sewer shall be smaller than 15 inches in diameter within a public right of way. Twin 12 inch culverts are permitted to convey stormwater underneath a single family residential driveway within a White Haven Borough right of way. All culverts and inlet structures shall be sized so that the calculated headwater for the design storm does not flood the adjacent roadway. All such structures shall maintain a 0.5 foot freeboard between the headwater and the edge of shoulder.

E. Detention and infiltration facilities shall be designed to conform to the release rate requirements of Section 304.

F. An emergency spillway capable of passing the peak 100-year, 24-hour, post-development inflow to the basin shall be provided assuming the primary outfall of the basin is blocked. A minimum of 1 foot freeboard shall be provided to the top of the basin berm to the water surface at the emergency spillway. Also, the invert of the emergency spillway must be specified at least 0.1 feet above the 100-year water surface in the basin. In lieu of the 1 foot freeboard requirement, the emergency spillway shall pass two times the peak one hundred year inflow with no freeboard requirement. All emergency spillways shall be suitably stabilized to prevent erosion. Alternate designs for emergency spillways may be considered by the Borough at the discretion of the Borough Engineer for underground detention/infiltration structures or above ground infiltration basins without a primary outlet.

G. The top of the basin berm shall be a minimum of eight feet wide. Where the basin depth from top of berm to invert of outfall structure exceeds ten feet, the top of berm shall be a minimum of ten feet wide.

H. The exterior and interior slopes of all detention basin cuts and fills shall be a minimum of 3 horizontal to 1 vertical. A 2.5 horizontal to 1 vertical slope may be allowed at the discretion of the Borough Engineer if specific site constraints warrant a steeper slope.

I. A concrete outlet structure with metal grate trash rack bolted to the top shall be used as principal basin outlet. The outlet structure should be of dimension to allow interior access for cleaning and maintenance.

J. In no case shall an outlet structure orifice be smaller than 3.0 inches in dimension.

K. All earth fill shall be free of wood, stumps, brush, roots, and other organic material subject to decomposition. Also, no fill shall be permitted that contains any stones larger than 3 inches measured in any direction.

L. Areas where the fill is to be placed shall be scarified prior to placement. Fill material for the embankment should be placed in maximum 12-inch lifts and each lift should be compacted with a roller to at least 95% of the maximum density obtained from compaction tests performed by the appropriate method in ASTM D698. Furthermore, the center of the embankment shall contain a clay core of relatively impervious material.

M. An easement to allow maintenance crews access to the basin and outlet areas shall be established around all basins to be maintained. The limits of such easement shall be 15 feet from the outside toe of all dams and embankments and top of all pond side slopes and shall be connected to a public right-of-way. The access way from the basin to a public street shall be a 12 inch thick 2A material road or equivalent surface of a minimum width of 10 feet.

N. The basin shall be sodded or topsoiled (at a 6 inch minimum depth) and seeded, including the bottom, side slopes, berms and embankments.

O. Adequate erosion protection shall be provided along all open channels, embankments and at all points of discharge.

P. Drainage pipes shall have a minimum slope of one-half percent (0.5%).

Q. All open ended pipes with a diameter of 12 inches or greater shall be fitted with concrete end walls or prefabricated end sections. All end walls, end sections or inlets shall be constructed and installed in accordance with PA DOT standards.

R. Manholes, cleanouts or inlets shall be used at all changes in horizontal alignment, at changes in vertical alignment and at all pipe junctions. No run of pipe shall exceed 400 feet in length, without appropriate measures to provide cleanout. Inlets shall be spaced at intervals to achieve desired capacity based on the methods outlined in PennDOT Design Manual 2.

S. All wet pond or retention basin designs shall incorporate biological controls to control mosquitoes.

T. Anti-seep collars and an inner core of relatively impervious material (clay) shall be provided under all stormwater detention/infiltration basin berms. Watertight anti-seep collars shall be installed around discharge pipes at intervals not to exceed 24 feet and shall extend a minimum of 2 feet beyond the outside of the pipe.

U. All inlets shall have a sump of a minimum of 1 foot and shall have weep holes covered with geotextile fabric to provide complete drainage of the inlet. All inlets shall be constructed on a base of a minimum of 12 inches of 2A material.

V. Inlets over 4 feet in depth shall have ladder rungs.

W. The design of all stormwater management facilities shall incorporate sound engineering principles and practices. White Haven Borough shall reserve the right to disapprove any design that would result in the occupancy or continuation of an adverse hydrologic or hydraulic condition.

§. Section 306. Calculation Methodology for Stormwater Management Facilities associated with a SWM Site Plan (Level 4)

A. Any stormwater runoff calculations involving drainage areas greater than 200 acres, including on- and off-site areas, shall use generally accepted calculation technique that is based on the NRCS soil cover complex method. It is assumed that all methods will be selected by the design professional based on the individual limitations and suitability of each method for a particular site. White Haven Borough may approve the use of the Modified Rational Method to estimate peak discharges from drainage areas that contain less than 200 acres.

B. All calculations consistent with this Ordinance using the soil cover complex method shall use the appropriate design rainfall depths for the various return period storms presented in Precipitation-Frequency Atlas of the United States, Atlas 14, Volume 2, Version 3.0, U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Spring, Maryland. NOAA's Atlas 14 can be accessed at: http://hdsc.nws.noaa.gov/hdsc/pfds/.[5]

C. For the purposes of predevelopment flow rate determination, undeveloped land shall be considered as "meadow" good condition, unless the natural ground cover generates a lower curve number or Rational 'C' value (i.e. forest).

D. All calculations using the Modified Rational Method shall use rainfall intensities consistent with appropriate times of concentration for overland flow and return periods from the Design Storm Curves from PA Department of Transportation Design Rainfall Curves. Times of concentration for overland flow shall be calculated using the methodology presented in Chapter 3 of Urban Hydrology for Small Watersheds, NRCS, TR-55, as amended. Times of concentration for channel and pipe flow shall be computed using Manning's equation.

E. Runoff Curve Numbers (CN) for both existing and proposed conditions to be used in the soil cover complex method shall be obtained from Urban Hydrology for Small Watersheds, NRCS, TR-55, as amended.

F. Runoff coefficients (c) for both existing and proposed conditions for use in the Rational method shall be obtained from the PA DEP Erosion and Sediment Pollution Control Manual, Latest Edition.

G. Where uniform flow is anticipated, the Manning equation shall be used for hydraulic computations, and to determine the capacity of open channels, pipes, and storm sewers. Values for Manning's roughness coefficient (n) shall be obtained from the PA DEP Erosion and Sediment Pollution Control Manual, Latest Edition. Outlet structures for stormwater management detention/infiltration facilities shall be designed to meet the performance standards of this Ordinance using any generally accepted hydraulic analysis technique or method.

H. The design of any stormwater detention facilities intended to meet the performance standards of this Ordinance shall be verified by routing the design storm hydrograph through these facilities using the Storage-Indication Method. For drainage areas greater than 20 acres in size, the design storm hydrograph shall be computed using a calculation method that produces a full hydrograph. White Haven Borough may approve the use of any generally accepted full hydrograph approximation technique which shall use a total runoff volume that is consistent with the volume from a method that produces a full hydrograph.

I. White Haven Borough has the authority to require that computed existing runoff rates be reconciled with field observations and conditions. If the designer can substantiate through actual physical calibration that more appropriate runoff and time-of-concentration values should be utilized at a particular site, then appropriate variations may be made upon review and recommendations of the Municipal Engineer. Calibration shall require detailed gauge and rainfall data for the particular site in question.

Part 4
Stormwater Management (SWM) Site Plan Requirements (Level 4)

§. Section 401. Plan Requirements

The following items shall be included in the SWM Site Plan:

A. Appropriate sections from the White Haven Borough Subdivision and Land Development Ordinance (SALDO), and other applicable local ordinances, shall be followed in preparing the SWM Site Plans. In cases where the requirements of the SALDO and this Ordinance conflict the more stringent requirement shall apply.

B. White Haven Borough shall not approve any SWM Site Plan that is deficient in meeting the requirements of this Ordinance. At its sole discretion and in accordance with this Article, when a SWM Site Plan is found to be deficient, White Haven Borough may either disapprove the submission and require a resubmission, or in the case of minor deficiencies, White Haven Borough may accept submission of modifications.

C. Provisions for permanent access or maintenance easements for all physical SWM BMPs, such as ponds and infiltration structures, as necessary to implement the Operation and Maintenance (O&M) Plan discussed in Item E.9 below.

D. The following signature block for White Haven Borough Engineer:

"(White Haven Borough Engineer), on this date (date of signature), has reviewed and hereby certifies that the SWM Site Plan is in substantial compliance with the White Haven Borough Stormwater Management Ordinance"

E. The SWM Site Plan shall provide the following information:

1. The overall stormwater management concept for the project.

2. A determination of site conditions in accordance with the BMP Manual[1]. A detailed site evaluation shall be completed for projects proposed in areas of carbonate geology or karst topography, mined areas, and other environmentally sensitive areas, such as brownfields; depending on site conditions, more stringent standards than those in this Ordinance may be imposed at the discretion of the Borough Engineer.

3. Stormwater runoff design computations and documentation as specified in this Ordinance, or as otherwise necessary to demonstrate that the maximum practicable measures have been taken to meet the

requirements of this Ordinance, including the recommendations and general requirements in Section 301; computations are required for all proposed stormwater management facilities.

4. Expected project time schedule.

5. A soil erosion and sediment control plan, where applicable, as prepared for and submitted to the approval authority, and in conformance with 25 Pa. Code 102.

6. The effect of the project (in terms of runoff volumes, water quality, and peak flows) on surrounding properties and aquatic features and on any existing stormwater conveyance system that may be affected by the project.

7. Plan and profile drawings of all SWM BMPs, including drainage structures, pipes, open channels, and swales. Roof drain, sump pump and foundation drain piping shall be shown in plan view for all non-residential Land Developments.

8. SWM Site Plan shall show the locations of existing and proposed on-lot wastewater facilities and water supply wells.

9. The SWM Site Plan shall include an O&M Plan for all existing and proposed physical stormwater management facilities. This plan shall address long-term ownership and responsibilities for O&M as well as schedules and costs for O&M activities.

10. The SWM Site Plan shall include the following additional elements:

    a. Shall be on 24 inch by 36 inch plan sheets.

    b. Construction details of all proposed stormwater management facilities.

    c. A stormwater facility design narrative.

    d. A signature block containing the name, address, and phone number of the individual responsible for the operation and maintenance plan.

    e. A drainage area map with drainage area boundaries, land cover and time of concentration paths shown.

    f. Existing contour intervals of two feet.

    g. All existing features and utilities on the property and within 50 feet of property.

h. 100 year floodplain and 100 year floodway lines along with the source of the information.

i. Proposed structures, roads, buildings and grades.

j. Soil boundary lines, soil descriptions, soil limitations and proposed resolutions to the soil limitations.

k. Date of submission, north arrow, graphic scale, call before you dig note and reference number, location map with scale and orientation of north, name of development, name and address of property owner, and the name and address of individual preparing the SWM Site Plan.

l. Existing and proposed easements along with legal descriptions for the easements.

m. Statement signed by landowner stating that they cannot alter any stormwater management facility without prior permission of White Haven Borough.

n. Soil infiltration test locations, surface elevation, infiltration test elevation, limiting zone elevation.

o. Location and existing use classification of receiving waterway.

p. During construction and post construction inspection schedule along with the name and address of the person performing the inspections.

q. Wetland boundaries.

r. Wetland delineation report completed within 5 years of the initial application.

s. All modifications granted to the provisions of this Ordinance.

t. A plan legend detailing all existing and proposed features shown in plan view.

u. A Sensitive Resource Map which shows all sensitive resources located on the site to be preserved (woodlands, meadows, floodplains, rock outcrops, wetlands, natural drainage ways, riparian areas, steep slopes and other natural features).

v. A signature block for the White Haven Borough Council.

w. Property lines and the names of all adjoining property owners.

x. Any other item that is deemed necessary by the Borough Engineer to satisfy the general intent of this Ordinance.

§. Section 402. Plan Submission

A. Five (5) copies of the SWM Site Plan shall be submitted as follows if the SWM Site Plan is not associated with a Land Development Plan:

1. Three (3) copies to White Haven Borough Council.

2. One (1) copy to the White Haven Borough Code Enforcement Officer.

3. One (1) copy to the White Haven Borough Engineer.

B. Additional copies shall be submitted as requested by White Haven Borough or PA DEP.

C. If the SWM Site Plan involves a Land Development Plan the number of copies of the SWM Site Plan shall coincide with the number of copies required for the Land Development application. Please note all Land Developments require a Level 4 application and a SWM Site Plan; however it is possible that a project can require a Level 4 application and SWM Site Plan but not be classified as a Land Development.

§. Section 403. Plan Review

A. The SWM Site Plan shall be reviewed by the White Haven Borough Engineer for consistency with the provisions of this Ordinance. After review, the Borough Engineer shall provide a written recommendation for the White Haven Borough Council to approve or disapprove the SWM Site Plan. If it is recommended to disapprove the SWM Site Plan, the Borough Engineer shall state the reasons for the disapproval in writing referencing sections of the Ordinance in which the plan is deficient. The Borough Engineer also may recommend approval of the SWM Site Plan with conditions and, if so, shall provide the acceptable conditions for approval in writing. The SWM Site Plan review and recommendations shall be completed within the time allowed by the Municipalities Planning Code for reviewing subdivision plans.

B. The White Haven Borough Council shall notify the applicant in writing within 45 days whether the SWM Site Plan is approved or disapproved. If the SWM Site Plan involves a Land Development Plan, the notification period is 90 days. If a longer notification period is provided by other statute, regulation, or ordinance, the applicant will be so notified by White Haven Borough. If White Haven Borough disapproves the SWM Site Plan, White Haven Borough shall cite the reasons for disapproval in writing.

C. If the SWM Site Plan involves a Land Development Plan, the approval / disapproval of the plan shall coincide with the approval / disapproval of the Land Development.

§. Section 404. Modification of Plans (Submission of Revised Plans)

A modification (revision) to a previously submitted SWM Site Plan that involves a change in SWM BMPs or techniques, or that involves the relocation or redesign of SWM BMPs, or that is necessary because soil or other conditions are not as stated on the SWM Site Plan as determined by White Haven Borough shall require a resubmission of the modified (revised) SWM Site Plan in accordance with this Article.

§. Section 405. Resubmission of Disapproved SWM Site Plans

A disapproved SWM Site Plan may be resubmitted, with the revisions addressing White Haven Borough's concerns, to White Haven Borough in accordance with this Article. The applicable review fee must accompany a resubmission of a disapproved SWM Site Plan.

§. Section 406. Authorization to Construct and Term of Validity

White Haven Borough's approval of an SWM Site Plan authorizes the regulated activities contained in the SWM Site Plan for a maximum term of validity of 5 years following the date of approval. White Haven Borough may specify a term of validity shorter than 5 years in the approval for any specific SWM Site Plan. Terms of validity shall commence on the date White Haven Borough signs the approval for an SWM Site Plan. If an approved SWM Site Plan is not completed according to Section 407 within the term of validity, then White Haven Borough may consider the SWM Site Plan disapproved and may revoke any and all permits. SWM Site Plans that are considered disapproved by White Haven Borough shall be resubmitted in accordance with Section 405 of this Ordinance.

§. Section 407. As-Built Plans, Completion Certificate, and Final Inspection

A. The developer shall be responsible for providing as-built plans of all SWM BMPs included in the approved SWM Site Plan. The as-built plans and an explanation of any discrepancies with the construction plans shall be submitted to White Haven Borough.

B. The as-built submission shall include a certification of compliance signed by a qualified professional verifying that all permanent SWM BMPs have been constructed according to the approved plans and specifications. If any licensed qualified professionals contributed to the construction plans, then a licensed qualified professional must sign the completion certificate.

C. After receipt of the completion certification by White Haven Borough, White Haven Borough or official designee may conduct a final inspection.

D. If a SWM Site Plan is associated with a residential Land Development, building permits shall not be issued by White Haven Borough unless a certification of compliance or financial security for all required site improvements is provided to the Borough. Also the construction of residential dwellings shall require the submission and approval of a Level 2 application prior to the building permit being issued. If a SWM Site Plan is associated with a non-residential Land Development an occupancy permit shall not be issued by White Haven Borough unless a certification of compliance is provided to the Borough.

§. Section 408. Modification of Ordinance Standards (Waiver)

A. The provisions of this Ordinance are intended as a minimum standard for the protection of the public health, safety, and welfare. If the literal compliance with any mandatory provision of these regulations is shown by the applicant, to the satisfaction of the Council, to be unreasonable or to cause undue hardship as it applies to a particular property; or, if the applicant shows that an alternative proposal will allow for equal or better results, the Council may grant a modification from such mandatory provision so that substantial justice may be done and the public interest secured while permitting the reasonable utilization of the property. However, the granting of a modification shall not have the effect of making null and void the intent and purpose of this Ordinance.

B. In granting modifications, the Council may impose such conditions as will, in its judgment, secure substantially the objectives of the standards and requirements of this Ordinance.

C. All requests for modifications shall be in writing, shall accompany and be made a part of the development application, and shall include:
   1. The specific sections of this Ordinance in question.
   2. Provisions for the minimum modification necessary as an alternate to the requirements.
   3. Justification for the modification, including the full grounds and facts of unreasonableness or hardship.

D. If the Council deny the request, the applicant shall be notified, in writing, of the reasons for denial. If the Council grant the request, the final record plan shall include a note which identifies the modification as granted. In any case, the Council shall keep a written record of all actions on all requests for modifications.

E. Modifications can not be granted by the Council to any section of this Ordinance that is a mandatory provision required by the Luzerne County Act 167 Phase II Stormwater Management Plan.

F. All modification requests shall be acted upon by the Council within forty-five (45) days of a written request for such modification. In the event the Council, or Borough Engineer, need additional information to evaluate the modification request, the request for additional information shall be in writing. The 45 day time limit for required action by the Council shall begin anew upon the receipt of the updated information provided by the applicant. A failure by the Council to act upon the request within the specified time period shall be considered a deemed approval of the modification request.

Part 5
Operations and Maintenance

§. Section 501. Responsibilities of Developers and Landowners

A. White Haven Borough shall make the final determination on the continuing maintenance responsibilities prior to final approval of the SWM Site Plan. White Haven Borough may require a dedication of such facilities as part of the requirements for approval of the SWM Site Plan. Such a requirement is not an indication that White Haven Borough will accept the facilities. White Haven Borough reserves the right to accept or reject the ownership and operating responsibility for any portion of the stormwater management controls. If the facility is rejected by White Haven Borough, provisions shall be made to identify the legal owner.

B. Three options exist for perpetual ownership and responsibility of stormwater management facilities associated with a SWM Site Plan:

1. The developer retains ownership;

2. A Homeowners Association assumes ownership and responsibility;

3. The facility is dedicated to, and accepted by, White Haven Borough.

C. Facilities, areas, or structures used as Stormwater Management BMPs shall be enumerated as permanent real estate appurtenances and recorded as deed restrictions or conservation easements that run with the land.

D. The O&M Plan shall be recorded as a restrictive deed covenant that runs with the land.

E. White Haven Borough may take enforcement actions against an owner for any failure to satisfy the provisions of this Article.

F. It is the responsibility of the land owner to maintain all Stormwater Management BMPs that are not associated with a SWM Site Plan (Level 1 – Level 3).

§. Section 502. O&M Agreements

The owner is responsible for O&M of the SWM BMPs. If the owner fails to adhere to the O&M Agreement, White Haven Borough may perform the services required and charge the owner appropriate fees. Nonpayment of fees may result in a lien against the property.

Part 6
Fees and Expenses

§. Section 601. General

White Haven Borough shall include all costs incurred in the fees charged to an applicant.
The fees may include, but not be limited to, costs for the following:

A. Administrative/clerical processing.

B. Review of the SWM Site Plan, applications, worksheets, sketches, calculations and the O & M Agreement.

C. Attendance at meetings.

D. Inspections.

E. Any additional work required to enforce any permit provision regulated by this Ordinance, correct violations, and assure proper completion of stipulated remedial actions.

§. Section 602. White Haven Borough Post Construction Stormwater Management Facility Inspection Fund

A. If a SWM Site Plan is associated with a Land Development the landowner is required to pay a specified amount to the White Haven Borough Stormwater Management Facility Inspection Fund to help defray the costs of future post construction inspections.

B. If required, the fee should be estimated by the White Haven Borough Engineer and shall cover the costs to inspect the post construction stormwater management facilities associated with the SWM Site Plan for a period of ten (10) years.

C. If required, the fee shall be paid by the landowner to White Haven Borough prior to final approval of the SWM Site Plan.

§. Section 603. Financial Guarantee

A. If a SWM Site Plan is associated with a Land Development the landowner is required to provide a financial guarantee for the timely installation and proper construction of all stormwater management facilities as shown on the approved SWM Site Plan.

B. The type of the financial guarantee shall conform to the types allowed by the PA Municipal Planning Code.

C. The financial guarantee shall be provided by the landowner to White Haven Borough prior to final approval of the SWM Site Plan.

Part 7
Prohibitions

§. Section 701. Prohibited Discharges and Connections

A. Any drain or conveyance, whether on the surface or subsurface, that allows any non-stormwater discharge including sewage, process wastewater, and wash water to enter the waters of this Commonwealth is prohibited.

B. No person shall allow, or cause to allow, discharges into surface waters of this Commonwealth which are not composed entirely of stormwater, except (1) as provided in Subsection C below and (2) discharges allowed under a state or federal permit.

C. The following discharges are authorized unless they are determined to be significant contributors to pollution to the waters of this Commonwealth:

- Discharges from firefighting activities	- Flows from riparian habitats and wetlands
- Potable water sources including water line flushing	- Uncontaminated water from foundations or from footing drains
- Irrigation drainage	- Lawn watering
- Air conditioning condensate	- Dechlorinated swimming pool discharges
- Springs	- Uncontaminated groundwater
- Water from crawl space pumps	- Water from individual residential car washing
- Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spill material has been removed) and where detergents are not used	- Routine external building wash down (which does not use detergents or other compounds)

D. In the event that White Haven Borough or DEP determines that any of the discharges identified in Subsection C significantly contribute to pollution of the waters of this Commonwealth, White Haven Borough or DEP will notify the responsible person(s) to cease the discharge.

§. Section 702. Roof Drains, Sump Pumps and Foundation Drains

Roof drains, sump pumps and foundation drains shall discharge to infiltration or vegetative BMPs and to the maximum extent practicable satisfy the criteria for DIAs consistent with Appendix C.1. of this Ordinance. For additional requirements of Roof drains, sump pumps and foundation drains see Section 301.Q.

§. Section 703. Alteration of SWM BMPs

No person shall modify, remove, fill, landscape, or alter any SWM BMPs, facilities, areas, or structures without the written approval of White Haven Borough.

Part 8
Enforcement and Penalties

§. Section 801. Right-of-Entry

Upon presentation of proper credentials, White Haven Borough, its agents and hired consultants may enter at reasonable times upon any property within White Haven Borough to inspect the condition of the stormwater structures and facilities in regard to any aspect regulated by this Ordinance.

§. Section 802. Inspection

A. If a SWM Site Plan is not associated with a Land Development or if a SWM Site Plan is not required the SWM BMPs must be inspected by the landowner or landowner's designee according to the following list of minimum frequencies:

1. Annually for the first 10 years following construction.

2. Immediately after every 10-year, 24-hour or greater storm event.

3. Critical times of construction of the SWM BMPs.

B. White Haven Borough shall also inspect SWM BMPs not associated with a Land Development to verify compliance with the Ordinance, at critical times of construction of the SWM BMPs, or upon a complaint by a third party.

C. If a SWM Site Plan is associated with a Land Development White Haven Borough may inspect the SWM BMPs annually for the first 10 years following construction. A copy of the inspection report shall be furnished by the Borough to the landowner within thirty (30) days after completing such inspection. The report shall note all deficiencies and provide a time frame and possible remedies for the landowner to correct all deficiencies. Furthermore, White Haven Borough may inspect the SWM BMPs during the site construction, most notably when a failure to inspect the BMP during its construction would result in a physical impossibility to verify compliance at the time of the final inspection (e.g., the construction of underground stormwater detention facilities, the compaction of berms and the backfilling of stormdrain pipe trenches, etc...).

§. Section 803. Enforcement

A. It shall be unlawful for a person to undertake any regulated activity except as provided in an approved SWM Site Plan or an approved **Level 1 – Level 3** application.

B. It shall be unlawful to violate Section 703 of this Ordinance.

C. Inspections regarding compliance with the SWM Site Plan are a responsibility of White Haven Borough.

§. Section 804. Suspension and Revocation

A. Any approval or permit issued by White Haven Borough pursuant to this Ordinance may be suspended or revoked for:

1. Non-compliance with or failure to implement any provision of the approved SWM Site Plan, sketch, worksheet, application or O&M Agreement.

2. A violation of any provision of this Ordinance or any other applicable law, ordinance, rule, or regulation relating to the regulated activity.

3. The creation of any condition or the commission of any act during the regulated activity which constitutes or creates a hazard, nuisance, pollution, or endangers the life or property of others.

B. A suspended approval may be reinstated by White Haven Borough when:

1. White Haven Borough has inspected and approved the corrections to the violations that caused the suspension.

2. White Haven Borough is satisfied that the violation has been corrected.

C. An approval that has been revoked by White Haven Borough cannot be reinstated. The applicant may apply for a new approval under the provisions of this Ordinance.

D. If a violation causes no immediate danger to life, public health, or property, at its sole discretion, White Haven Borough may provide a time period of no more than thirty (30) days for the owner to correct the violation. In these cases, White Haven Borough will provide the owner, or the owner's designee, with a written notice of the violation and the time period allowed for the owner to correct the violation. If the owner does not correct the violation within the allowed time period, White Haven Borough may revoke or suspend any, or all, applicable approvals and permits pertaining to any provision of this Ordinance.

§. Section 805. Penalties

A. Anyone violating the provisions of this Ordinance shall be guilty of a summary offense, and upon conviction, shall be subject to a fine of not more than $600.00 for each violation, recoverable with costs. Each day that the

violation continues shall be a separate offense and penalties shall be cumulative.

B. In addition, White Haven Borough may institute injunctive, mandamus, or any other appropriate action or proceeding at law or in equity for the enforcement of this Ordinance. Any court of competent jurisdiction shall have the right to issue restraining orders, temporary or permanent injunctions, mandamus, or other appropriate forms of remedy or relief.

§. Section 806. Appeals

A. Any person aggrieved by any action of White Haven Borough or its designee, relevant to the provisions of this Ordinance, may appeal to the White Haven Borough Zoning Hearing Board within 30 days of that action.

B. Any person aggrieved by any decision of White Haven Borough Zoning Hearing Board, relevant to the provisions of this Ordinance, may appeal to the County Court of Common Pleas in the county where the activity has taken place within 30 days of White Haven Borough Zoning Hearing Board's decision.

Part 9
References

1. Pennsylvania Department of Environmental Protection. No. 363-0300-002 (December 2006), as amended and updated. *Pennsylvania Stormwater Best Management Practices Manual.* Harrisburg, PA.

2. Pennsylvania Department of Environmental Protection. No. 363-2134-008 (April 15, 2000), as amended and updated. *Erosion and Sediment Pollution Control Program Manual.* Harrisburg, PA.

3. U.S. Department of Agriculture, National Resources Conservation Service (NRCS). *National Engineering Handbook.* Part 630: Hydrology, 1969-2001. Originally published as the *National Engineering Handbook*, Section 4: Hydrology. Available from the NRCS online at: http://www.nrcs.usda.gov/.

4. U.S. Department of Agriculture, Natural Resources Conservation Service. 1986. *Technical Release 55: Urban Hydrology for Small Watersheds*, 2nd Edition. Washington, D.C.

5. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, Hydrometeorological Design Studies Center. 2004-2006. *Precipitation-Frequency Atlas of the United States, Atlas 14*, Volume 2, Version 3.0, Silver Spring, Maryland. Internet address: http://hdsc.nws.noaa.gov/hdsc/pfds/.

6. Borton Lawson Engineering / Architecture. *The Luzerne County Act 167 Phase II Stormwater Management Plan.*

Part 10
Adoption

Section 1000. Severability

In the event that a court of competent jurisdiction declares any section or provision of this Ordinance invalid, such decision shall not affect the validity of any of the remaining provisions of this Ordinance.

Section 1001. Repealer

Any other ordinance provision(s) or regulation of White Haven Borough inconsistent with any of the provisions of this Ordinance is hereby repealed to the extent of the inconsistency only.

Section 1002. Effective Date

This Ordinance is to be enacted, ordained, adopted and approved by the White Haven Borough Council, on this 11th day of April, 2011.
This Ordinance shall take effect immediately upon its adoption.

(Ord. Adopted 4/11/11)

APPENDIX A

STANDARD OPERATION AND MAINTENANCE (O&M) AGREEMENT STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES (SWM BMPs) NOTE: THIS AGREEMENT IS TO BE USED AS AN EXAMPLE ONLY!

THIS AGREEMENT, made and entered into this _____ day of _____, 20___, by and between _____, (hereinafter the "Landowner"), and the Municipality of White Haven Borough, Luzerne County, Pennsylvania, (hereinafter "White Haven Borough");

WITNESSETH

WHEREAS, the Landowner is the owner of certain real property as recorded by deed in the land records of Luzerne County, Pennsylvania, Deed Book _____ at page _____, (hereinafter "Property").

WHEREAS, the Landowner is proceeding to build and develop the Property; and

WHEREAS, the SWM BMP O&M Plan approved by White Haven Borough (hereinafter referred to as the "Plan") for the property identified herein, which is attached hereto as Appendix A and made part hereof, as approved by White Haven Borough, provides for management of stormwater within the confines of the Property through the use of BMPs; and

WHEREAS, White Haven Borough, and the Landowner, his successors and assigns, agree that the health, safety, and welfare of the residents of White Haven Borough and the protection and maintenance of water quality require that on-site SWM BMPs be constructed and maintained on the Property; and

WHEREAS, White Haven Borough requires, through the implementation of the approved SWM Site Plan entitled_____, completed by_____, last revised _____, including all applicable construction detail sheets, that SWM BMPs as required by said Plan and the White Haven Borough Stormwater Management Ordinance be constructed and adequately operated and maintained by the Landowner, successors, and assigns.

NOW, THEREFORE, in consideration of the foregoing promises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

1. The Landowner shall construct the BMPs in accordance with the plans and specifications identified in the approved SWM Site Plan.

2. The Landowner shall operate and maintain the BMPs as shown on the Plan in good working order in accordance with the specific maintenance requirements noted on the approved SWM Site Plan at the Landowners sole expense.

3. The Landowner hereby grants permission to White Haven Borough, its authorized agents and employees, to enter upon the property, at reasonable times and upon presentation of proper credentials, to inspect the BMPs whenever necessary. The Landowner shall reimburse White Haven Borough for all reasonable costs for inspections that are not covered by the White Haven Borough Post Construction Stormwater Inspection Fund Fee paid to White Haven Borough by the Landowner prior to SWM Site Plan approval.

4. In the event the Landowner, his successor and assigns, fails to maintain the BMPs in good working condition acceptable to White Haven Borough, White Haven Borough may enter upon the property and take such necessary and prudent action to maintain said BMPs and to charge the costs of the maintenance and/or repairs to the Landowner, his successors and assigns. It is expressly understood and agreed that White Haven Borough is under no obligation to maintain or repair said facilities and in no event shall this agreement be misconstrued to impose any such obligation on White Haven Borough. In the event White Haven Borough, pursuant to this agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials and the like on account of the Landowner's or his successor's and assign's failure to perform such work, the Landowner, his successors and assigns, shall reimburse White Haven Borough upon demand, within thirty (30) days of receipt of invoice thereof, for all costs incurred by White Haven Borough hereunder. If not paid within said thirty (30) day period, White Haven Borough may enter a lien against the property for costs, or may proceed to recover its costs through proceedings in equity or at law as authorized under the provisions of the Second Class Borough Code or any other law of the Commonwealth of Pennsylvania.

5. The Landowner, his successors and assigns, shall and do hereby agree to exonerate, indemnify and save harmless White Haven Borough, White Haven Borough officers, elected officials, engineers and attorneys and White Haven Borough appointees and any other agent, from any and all claims, actions, awards, verdicts, judgments, damages, casualties and/or occurrences that do arise out of White Haven Borough's approval and the construction, presence, existence and/or maintenance of the BMPs by the Landowner and the Landowner's heirs, successors and/or assigns.

6. In the event a claim is asserted against White Haven Borough, its agents or employees, White Haven Borough shall promptly notify the Landowner, his successors and assigns, and the Landowner shall defend, at their own expense, any suit based on such claim. If any judgment or claims against White Haven Borough, its agents or employees shall be allowed, the Landowner, his successors and assigns shall pay said judgment and/or claim, as well as all costs and expenses in connection therewith.

7. In the event of an emergency or the occurrence of special or unusual circumstances or situations, White Haven Borough may enter the property, if the Landowner is not immediately available, without notification or identification, to inspect and perform necessary maintenance and repairs, if needed, when the health, safety or welfare of the citizens is at jeopardy. However, White Haven Borough shall notify the Landowner of any inspection, maintenance or repair undertaken within ten (10) days of the activity. The Landowner shall reimburse White Haven Borough for the costs.

8. If any part of this Agreement is held to be invalid or unenforceable, all other remaining provisions of the Agreement shall remain in full force and effect.

9. Nothing in this Agreement shall be construed as an offer by the Landowner to dedicate any of the BMPs to White Haven Borough, and nothing herein shall be deemed to be an acceptance of an offer of dedication.

10. This agreement shall be recorded by the Landowner among the land records of Luzerne County, Pennsylvania prior to SWM Site Plan approval being issued by White Haven Borough, and shall constitute a covenant running with the property and/or equitable servitude, and shall be binding on the Landowner, his administrators, executors, assigns, heirs, and any other successors in interests, in perpetuity.

ATTEST:

WITNESS the following signatures and seals:

(SEAL)
Borough:

For White Haven

_____
President

For the Landowner:

_____

ATTEST:

_____ (City, Borough, Borough)

County of _____, Pennsylvania

I, _____, a Notary Public in and for the county and state aforesaid, whose commission expires on the _____ day of _____, 20_____, do hereby certify that _____ whose name(s) is/are signed to the foregoing Agreement bearing date of the _____ day of _____, 20_____, has acknowledged the same before me in my said county and state.

GIVEN UNDER MY HAND THIS _____ day of _____, 20_____.

_____ _____

NOTARY PUBLIC **(SEAL)**

APPENDIX B

STORMWATER MANAGEMENT PERMIT APPLICATION GUIDELINES

Anyone performing a regulated activity, unless specifically exempt by Section 302 of the Ordinance, must complete the accompanying Stormwater Management Permit Application and Sketch, and submit to White Haven Borough. A regulated activity is defined by this Ordinance as:

Regulated Activity - Any earth disturbance activities or any activities that involve the alteration or development of land in a manner that may affect stormwater runoff.

This includes but is not limited to: the clearing of wooded areas, grading and excavating, placement of pavement (driveways, parking areas, roads), construction of buildings, construction of stormwater management facilities, the diversion or piping of any natural or man-made stream channel, the construction of other structures (homes, sheds, garages, commercial and industrial buildings), and other activities which alter the way stormwater runs off of the landscape. See Section 105 of Ordinance for additional detail on Regulated Activities. Impervious area is defined by this Ordinance as:

Impervious Surface (Impervious Area) - A surface that prevents the infiltration of water into the ground. Impervious surfaces include, but are not limited to, streets, sidewalks, pavements, parking lots, driveways, roofs, stone patios. See definition of "Gravel (Crushed Stone)" for when gravel classifies as impervious area.

Gravel (Crushed Stone) - Considered to be impervious when the intended use of the stone is for transportation purposes, parking areas, construction areas, trails, or if the gravel is compacted at any time during or after its placement; landscaping stone is not considered as impervious area.

Depending on the amount of impervious area placed and the amount of earth disturbance to the project site, this Ordinance requires different levels of stormwater management, and correspondingly different levels of design and review.

Level 1: Proposed impervious area is between 250 sq. ft. and 1,000 sq. ft. or total earth disturbance is between 500 sq. ft. and 5,000 sq. ft.

Stormwater Management Controls: Ensure that adverse downstream impacts do not occur due to redirecting stormwater flows towards nearby structures. Stormwater Management Controls must comply with Section 301 of this Ordinance.

Submission: Submit the Stormwater Management Permit Application and Sketch to White Haven Borough Code Enforcement Officer

Review: Shall be completed by White Haven Borough Code Enforcement Officer.

Level 2: Proposed impervious area is between 1,000 sq. ft. and 5,000 sq. ft. or total earth disturbance is between 5,000 sq. ft. and 10,000 sq. ft.

Stormwater Management Controls: Utilize Disconnected Impervious Area (DIA) for stormwater controls as outlined in Ordinance Appendix C.1; if DIA cannot be achieved, utilize stormwater management controls for small projects as outlined in Ordinance Appendix E.

Submission: Submit the Stormwater Management Permit Application and computations for DIA; the worksheet in this Ordinance Appendix C.1 shall be used and submitted. If DIA cannot be achieved, submit computations for Stormwater Management for Small Projects; the worksheet in this Ordinance Appendix E must be used and submitted.

Review: Shall be completed by the White Haven Borough Engineer.

Level 3: Proposed impervious area is between 5,000 sq. ft. and 10,000 sq. ft. or total earth disturbance is between 10,000 sq. ft. and 20,000 sq. ft. but does not qualify as a Land Development. All Land Developments require a Level 4 submission and review.

Stormwater Management Controls: Capture and permanently remove the first 2 inches of runoff over all proposed impervious areas; infiltrate at least the first 0.5 inches.

Submission: Submit the Stormwater Management Permit Application and computations for permanently removing the first 2 inches of runoff over all proposed impervious areas; the worksheet in this Ordinance Appendix D must be used.

Review: Shall be completed by the White Haven Borough Engineer.

Level 4: Proposed impervious area is greater than 10,000 sq. ft. or total earth disturbance is greater than 20,000 sq. ft. or any project that qualifies as a Land Development.

Stormwater Management Controls: All requirements of this Ordinance are applicable, including water quality and volume controls as found in Article III Section 303 and peak rate controls as found in Article III Section 304.

Submission: Submit the Stormwater Management Permit Application and Stormwater Management (SWM) Site Plan as in Article IV of this Ordinance.

Review: Shall be completed by the White Haven Borough Engineer.

For Dry Well #2 or Infiltration Trench:

- A dry well #2 is used for depths between 1.5 feet and 4.0 feet; an infiltration trench is used for depths between 2.0 and 5.0 feet.
- Select the depth "***D***" (feet) for the facility.
- For calculations, assume the void ratio of the stone is 40%.
- Calculate volume in Cubic Feet:

$$V_{cf} = (1 \text{ inch} \times 1/12 \times D) / 0.4$$

- Calculate surface area of the facility in Square Feet:

$$A_{sf} = V_{cf} / D$$

- Determine the dimensions of the facility based on "***A***" calculated.

STEP 5 - Sketch a simple site plan that includes:

- Name and address of the owner of the property, and or name and address of the individual preparing the plan, along with the date of submission.
- Location of proposed structures, driveways, or other paved areas with approximate size in square feet.
- Location, orientation, and dimensions of all proposed BMPs. For all rain gardens/bioretention, infiltration trenches, and dry wells, the length, width, and depth must be included on the plan. For rain barrels or cisterns the volume must be included.
- Location of any existing or proposed on-site septic system and/or potable water wells showing rough proximity to infiltration facilities.
- Location of any existing waterbodies such as; streams, lakes, ponds, wetlands, or other waters of the Commonwealth within 100 feet of the project site, and the distance to the project site and/or BMPs. It is recommended that the project or BMPs be located at least than fifty (50) feet away from a perennial or intermittent stream. If an existing buffer is legally prescribed (i.e., deed, covenant, easement, etc.), the existing buffer shall be maintained.
- Location of all existing structures including buildings, driveways, and roads within fifty (50) feet of the project site.

Fill in the small projects worksheet found in Table E.4, then submit the worksheet and the simple site sketch (or equivalent) to White Haven Borough.

Table E.4. Small Projects Worksheet (Level 3 Application).

Small Projects Worksheet					
STEP 1					
Component #1 of Project	**Impervious Area from Component #1**	**Component #2 of Project**	**Impervious Area from Component #2**	**Component #3 of Project**	**Impervious Area from Component #3**
	sq. ft.		sq. ft.		sq. ft.
Total Impervious Area =		sq. ft.			
STEP 2					
BMP #1		**BMP #2**		**BMP #3**	
Captures:		**Captures:**		**Captures:**	
Impervious Area I_1:	sq. ft.	**Impervious Area I_2:**	sq. ft.	**Impervious Area I_3:**	sq. ft.
STEP 3					
BMP #1		**BMP #2**		**BMP #3**	
Type:		**Type:**		**Type:**	
STEP 4					
BMP #1		**BMP #2**		**BMP #3**	
Volume:		**Volume:**		**Volume:**	
Dimensions:		**Dimensions:**		**Dimensions:**	
Note: For additional BMPs, use additional sheets					

E.4. Example

Joe Homeowner wants to build an 800 sq. ft. two car garage, and a 700 sq. ft. impervious driveway. Site conditions in the urban setting prevent the use of Disconnected Impervious Area (DIA) as a BMP.

STEP 1 – Determine the total area of all proposed impervious surfaces that will need to drain to one or more BMPs.

- Garage roof: 20 ft. x 40 ft. = 800 sq. ft.
- Driveway: 50 ft. x 14 ft. = 700 sq. ft.
- Total proposed impervious surface = 800 + 700 = **1,500 sq. ft.**

STEP 2 – Determine locations where BMPs need to be placed, and the contributing impervious area "*I*" to each.

- Use BMP #1 to capture runoff from the garage (I_1 = 800 sq. ft.)
- Use BMP #2 to capture runoff from the driveway (I_2 = 700 sq. ft.).

STEP 3 – Select the BMPs to be used and determine the requirements of each from Section E.3.

- BMP #1 – rain barrel/cistern
- BMP #2 – infiltration trench

STEP 4 – Obtain the required storage volume "*V*" and surface area "*A*" needed for each of the proposed BMPs from the appropriate heading below.

For Rain Barrel/Cistern (BMP #1)

- Calculate volume in cubic feet:

$$V_{cf} = (1 \text{ inch} \times 1/12 \times I_1) / 0.75$$
$$= (1 \text{ inch} \times 1/12 \times 800) / 0.75$$
$$= 88.89 \text{ cubic feet}$$

- Convert to gallons:

$$V_{gal} = V_{cf} \times 7.48$$
$$= 88.89 \times 7.48$$
$$= 664.8 \text{ gallons} \rightarrow \text{round up to } 665 \text{ gallons}$$

For Infiltration Trench (BMP #2)

- Select depth "***D***" for the facility of **2 feet** (between 2.0 feet and 5.0 feet).
- Calculate volume in cubic feet:

$$V_{cf} = (1 \text{ inch} \times 1/12 \times I_2) / 0.4$$
$$= (1 \text{ inch} \times 1/12 \times 700) / 0.4$$
$$= 145.8 \text{ cubic feet} \rightarrow \text{round up to } 150 \text{ cubic feet}$$

- Calculate surface area of the facility in square feet:

$$A_{sf} = V_{cf} / D$$
$$= 150 / 2$$
$$= 75 \text{ square feet}$$

- The driveway is 50 feet long, so using the upper 30 feet of the driveway as the length of the infiltration trench, the width of the trench =

75 square feet / 30 feet = 2.5 feet

- Use a **2.5 ft. wide x 30 ft. long x 2 ft. deep** infiltration trench.

STEP 5 – Prepare a simple site sketch (Figure E.7) and complete Small Projects Worksheet (Table E.4) to send to White Haven Borough.

Figure E.7. Simple Site Sketch of Proposed Project and Proposed BMPs.

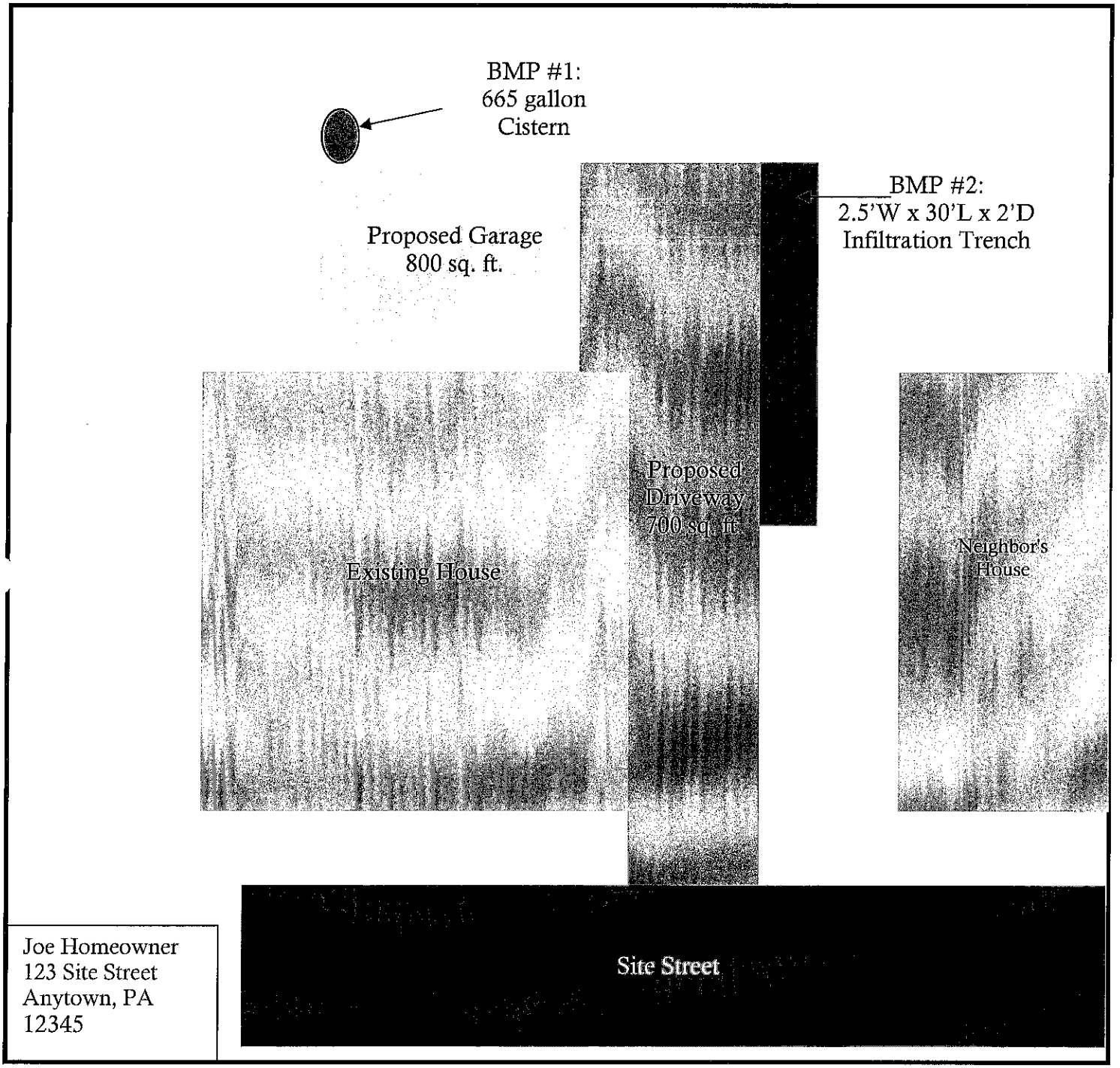


Table E.4. Small Projects Worksheet.

Small Projects Worksheet					
STEP 1					
Component #1 of Project	**Impervious Area from Component #1**	**Component #2 of Project**	**Impervious Area from Component #2**	**Component #3 of Project**	**Impervious Area from Component #3**
Garage Roof	800 sq. ft.	Driveway	700 sq. ft.	N/A	N/A
Total Impervious Area =		1,500 sq. ft.			
STEP 2					
BMP #1		**BMP #2**		**BMP #3**	
Captures:	Garage Roof	**Captures:**	Driveway	**Captures:**	N/A
Impervious Area I_1:	800 sq. ft.	**Impervious Area I_2:**	700 sq. ft.	**Impervious Area I_3:**	N/A
STEP 3					
BMP #1		**BMP #2**		**BMP #3**	
Type:	Cistern	**Type:**	Infiltration Trench	**Type:**	N/A
STEP 4					
BMP #1		**BMP #2**		**BMP #3**	
Volume:	88.89 cu. ft.	**Volume:**	150 cubic feet	**Volume:**	N/A
Dimensions:	665 gallons	**Dimensions:**	2.5' W x 30'L x 2' D	**Dimensions:**	N/A
Note: For additional BMPs, use additional sheets					

APPENDIX F.1

STORMWATER MANAGEMENT DISTRICT MAP

APPENDIX F.2

STORMWATER MANAGEMENT PERMIT FEE SCHEDULE

1. **LEVEL 1: ADMINISTRATOR IS CODE ENFORCEMENT OFFICER**

TOTAL FEE DUE AT APPLICATION	$ 0.00

2. **LEVEL 2: ADMINISTRATOR IS BOROUGH ENGINEER**

   a. INITIAL BOROUGH PROCESSING: $ 65.00

   b. APPLICATION, COMPUTATIONS, WORKSHEET $100.00 &SKETCH REVIEW (1 REVIEW & REPORT)

   c. PRE-CONSTRUCTION PROPERTY INSPECTION: $88.00

   d. DURING CONSTRUCTION INSPECTION – PRIOR: $88.00 TO PAVING OF DRIVEWAY (1 INSPECTION)

   e. POST-CONSTRUCTION PROPERTY INSPECTION $88.00 (1 INSPECTION)

TOTAL FEE DUE AT APPLICATION	$429.00

3. **LEVEL 3: ADMINISTRATOR IS BOROUGH ENGINEER**

   a. INITIAL BOROUGH PROCESSING: $ 75.00

   b. APPLICATION, COMPUTATIONS, WORKSHEET $160.00 &SKETCH REVIEW (1 REVIEW & REPORT)

   c. PRE-CONSTRUCTION PROPERTY INSPECTION: $ 88.00

   d. DURING CONSTRUCTION INSPECTION: $88.00

   e. POST-CONSTRUCTION PROPERTY INSPECTION $88.00 (1 INSPECTION)

TOTAL FEE DUE AT APPLICATION	$499.00

4. **LEVEL 4: ADMINISTRATOR IS BOROUGH ENGINEER**

   a. BOROUGH PROCESSING: $100.00

   b. O&M AGREEMENT REVIEW:

(TOTAL FOR SOLICITOR & ENGINEER)	$500.00
c. SWM SITE PLAN & CALCULATION REVIEW	
i. FEE PER DISTURBED ACRE	$ 50.00
ii. FEE PER EACH WATERSHED (ROUTING)	$300.00
MINIMUM TOTAL FEE AT APPLICATION	$950.00

LEVEL 2 & 3 APPLICATION NOTES:

- IF ANY MEETINGS, ADDITIONAL INSPECTIONS OR ADDITIONAL REVIEWS ARE REQUIRED TO VERIFY COMPLIANCE WITH THE ORDINANCE OR AT REQUEST OF THE APPLICANT PRIOR TO COMPLETION OF THE PROJECT THE APPLICANT WILL BE BILLED ON A TIME AND MATERIAL BASIS BY WHITE HAVEN BOROUGH AT THE RATE OF $85/HR (COVERS ENGINEER'S TIME AND BOROUGH PROCESSING). NO OCCUPANCY PERMIT SHALL BE ISSUED UNDER ANY CIRCUMSTANCES UNTIL ALL OUTSTANDING WHITE HAVEN BOROUGH INVOICES ARE PAID IN FULL BY THE APPLICANT.

LEVEL 4 APPLICATION NOTES:

- REVIEW FEES FOR REVISED AGREEMENTS, PLANS AND CALCULATIONS WILL BE BILLED TO APPLICANT BY THE BOROUGH ON A TIME AND MATERIAL BASIS AT THE BOROUGH ENGINEERS / SOLICITORS CURRENT BILLING RATE.

- INSPECTION FEES WILL BE BILLED TO THE APPLICANT BY THE BOROUGH ON A TIME AND MATERIAL BASIS AT THE BOROUGH ENGINEERS CURRENT BILLING RATE. CONSTRUCTION INSPECTIONS WILL BE PERFORMED DURING ALL CRITICAL TIMES OF CONSTRUCTION AS DEFINED IN THE ORDINANCE.

- ABOVE FEES DO NOT INCLUDE THE FEE REQUIRED FOR THE POST CONSTRUCTION INSPECTION FUND. THIS FEE WILL BE DETERMINED ON A PROJECT BY PROJECT BASIS AND IS REQUIRED TO BE PAID PRIOR TO FINAL SWM SITE PLAN APPROVAL.

- IN DETERMINING THE FEE REQUIRED PER DISTURBED ACRE APPLICANT MUST ROUND UP. (I.E. FEE FOR A PROJECT WITH 1.1 ACRES OF DISTURBANCE IS $100.00)

STORMWATER MANAGEMENT PERMIT APPLICATION

Applicant Name, Address, Phone Number and Email:	**Nature of Activity (i.e. driveway, single-lot structure, parking lot, road, trail, subdivision, etc.):**

Total Proposed Impervious Area (I) (sq. ft.):

Total Proposed Earth Disturbance (ED) (sq. ft.):

Level 1: (I) is between 250 sq. ft. and 1,000 sq. ft. or (ED) is between 500 sq. ft. and 5,000 sq. ft.

Level 2: (I) is between 1,000 sq. ft. and 5,000 sq. ft. or (ED) is between 5,000 sq. ft. and 10,000 sq. ft.

Complete and attach worksheet contained in Appendix C.1/E → Is information attached? No / Yes

Level 3: (I) is between 5,000 sq. ft. and 10,000 sq. ft. or (ED) is between 10,000 sq. ft. and 20,000 sq. ft.

Complete and attach worksheet contained in Ordinance Appendix D → Is worksheet attached? No / Yes

Level 4: (I) is greater than 10,000 sq. ft. or (ED) is greater than 20,000 sq. ft. and all Land Developments

Complete and submit SWM Site Plan in accordance with Ordinance Article IV → Is a SWM Site Plan included? No / Yes

Show on the accompanying sketch that adverse downstream stormwater impacts are not created or worsened, and that additional stormwater runoff will not discharge towards adjacent property

All requirements of the Ordinance have been met. Applicant Signature:_____
Date:_____

FOR REVIEWER ONLY: STORMWATER MANAGEMENT PERMIT NO. _____

This stormwater management permit application has been APPROVED DENIED (circle one)

Reviewed by (print):_____ Reason for Denial:_____

WHITE HAVEN BOROUGH INSPECTION LOG

APPLICATION LEVEL NO.: _____

STORMWATER MANAGEMENT PERMIT NO.: _____

PRE-CONSTRUCTION INSPECTION

INSPECTOR NAME: _____

DATE: _____

SIGNATURE: _____

COMMENTS: _____

_____

DURING-CONSTRUCTION INSPECTION

INSPECTOR NAME: _____

DATE: _____

SIGNATURE: _____

COMMENTS: _____

_____

POST-CONSTRUCTION INSPECTION

INSPECTOR NAME: _____

DATE: _____

SIGNATURE: _____

COMPLIES / DOES NOT COMPLY:

_____

COMMENTS: _____

LEVEL 1 APPLICATION - PROJECT SKETCH

- **Show direction of proposed stormwater discharges**
- **Show all structures within 50 feet of site**
- **If storm sewers are present, show approximate location of inlets**
- **Note: The applicant must construct all structures and discharge points as depicted on this sketch. Any deviation from this sketch without prior approval from White Haven Borough may be considered a violation of the White Haven Borough Stormwater Management Ordinance and may subject the applicant to the penalties of the Ordinance and/or the revocation of the Stormwater Management Permit.**

EXAMPLE 1 STORMWATER MANAGEMENT PERMIT APPLICATION

Applicant Name, Address, Phone Number and Email:	Nature of Activity (i.e. driveway, single-lot structure, parking lot, road, trail, subdivision, etc.):
Joe Homeowner 123 Site Street Anytown, PA 12345 570-788-1234 – joeh@ptd.net	Construction of one car garage

Total Proposed Impervious Area (I) (sq. ft.): 300 square feet

Total Proposed Earth Disturbance (ED) (sq. ft.): 400 square feet

Level 1: (I) is between 250 sq. ft. and 1,000 sq. ft. or (ED) is between 500 sq. ft. and 5,000 sq. ft.

Level 2: (I) is between 1,000 sq. ft. and 5,000 sq. ft. or (ED) is between 5,000 sq. ft. and 10,000 sq. ft.

Complete and attach worksheet contained in Appendix C.1/E → Is information attached? No / Yes

Level 3: (I) is between 5,000 sq. ft. and 10,000 sq. ft. or (ED) is between 10,000 sq. ft. and 20,000 sq. ft.

Complete and attach worksheet contained in Ordinance Appendix D → Is worksheet attached? No / Yes

Level 4: (I) is greater than 10,000 sq. ft. or (ED) is greater than 20,000 sq. ft.

Complete and submit SWM Site Plan in accordance with Ordinance Article IV → Is a SWM Site Plan included? No / Yes

Show on the accompanying sketch that adverse downstream stormwater impacts are not created or worsened, and that additional stormwater runoff will not discharge towards adjacent property

All requirements of the Ordinance have been met. Applicant Signature: Joseph Homeowner Date: 6/30/2010

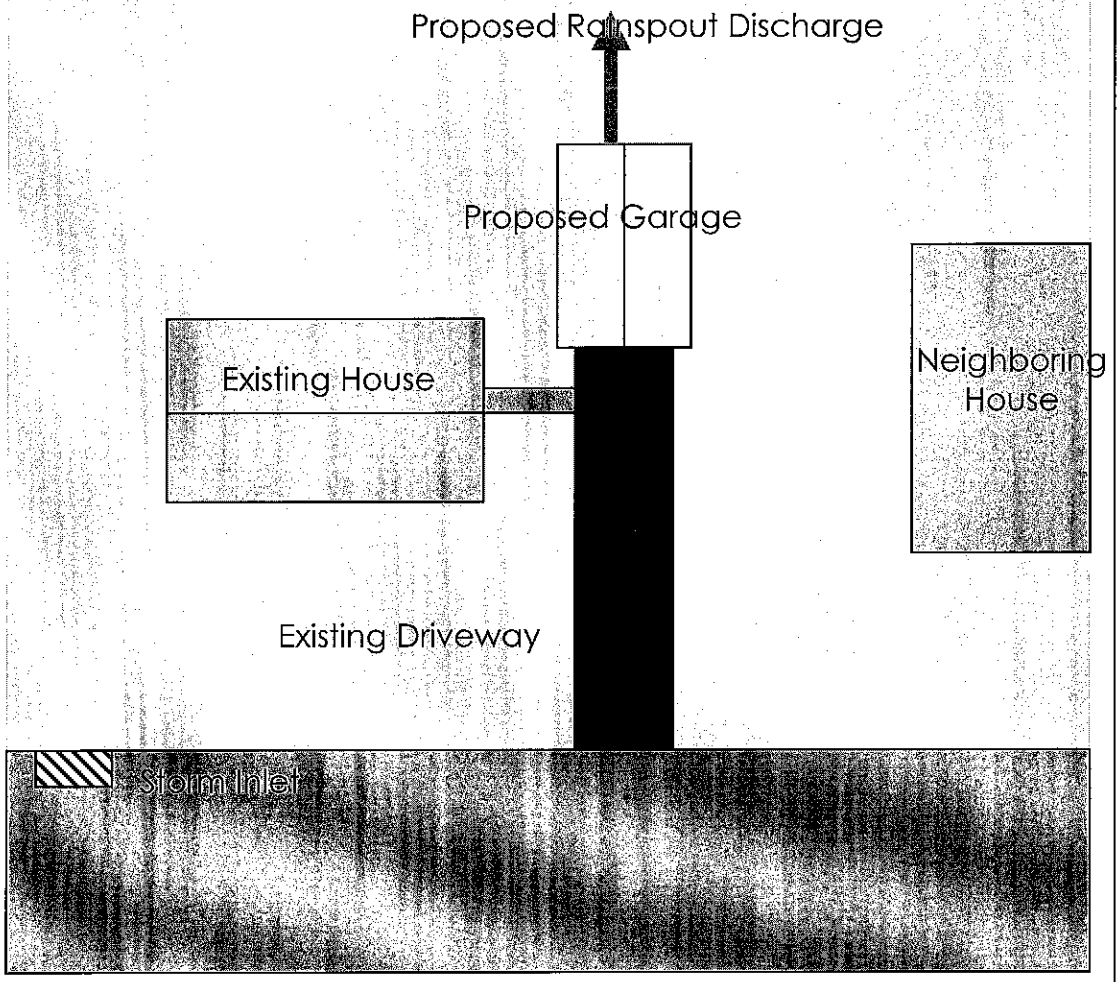
FOR REVIEWER ONLY

This stormwater management permit application has been (APPROVED) DENIED (circle one)

Reviewed by (print): Municipal Official Reason for Denial: N/A

EXAMPLE 1 PROJECT SKETCH FOR LEVEL 1 APPLICATION

- Show direction of proposed stormwater discharges
- Show all structures within 50 feet of site
- If storm sewers are present, show approximate location of inlets



EXAMPLE 2 STORMWATER MANAGEMENT PERMIT APPLICATION

Applicant Name, Address, Phone Number and Email:	Nature of Activity (i.e. driveway, single-lot structure, parking lot, road, trail, subdivision, etc.):
Joe Homeowner 123 Site Street Anytown, PA 12345 570-788-1234 – joeh@ptd.net	Construction of single-family home, driveway, and stone patio

Total Proposed Impervious Area (I) (sq. ft.): 3,300 square feet

Total Proposed Earth Disturbance (ED) (sq. ft.): 6,000 square feet

Level 1: (I) is between 250 sq. ft. and 1,000 sq. ft. or (ED) is between 500 sq. ft. and 5,000 sq. ft.

Level 2: (I) is between 1,000 sq. ft. and 5,000 sq. ft. or (ED) is between 5,000 sq. ft. and 10,000 sq. ft.

Complete and attach worksheet contained in Appendix C.1/ → Is worksheet attached? No / Yes (Yes circled)

Level 3: (I) is between 5,000 sq. ft. and 10,000 sq. ft. or (ED) is between 10,000 sq. ft. and 20,000 sq. ft.

Complete and attach worksheet contained in Ordinance Appendix D → Is worksheet attached? No / Yes

Level 4: (I) is greater than 10,000 sq. ft. or (ED) is greater than 20,000 sq. ft.

Complete and submit SWM Site Plan in accordance with Ordinance Article IV → Is a SWM Site Plan included? No / Yes

Show on the accompanying sketch that adverse downstream stormwater impacts are not created or worsened, and that additional stormwater runoff will not discharge towards adjacent property

All requirements of the Ordinance have been met. Applicant Signature Joseph Homeowner Date: 6/30/2010

FOR REVIEWER ONLY

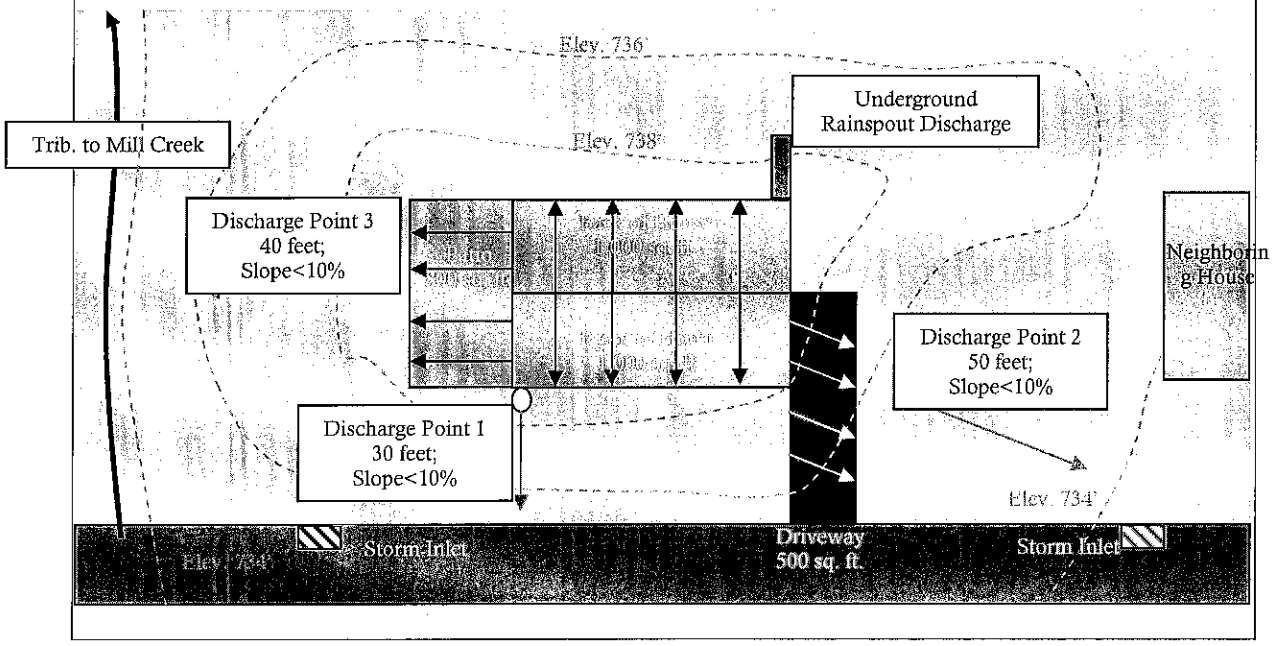
This stormwater management permit application has been (APPROVED) DENIED (circle one)

Reviewed by (print): Municipal Official Reason for Denial: N/A

EXAMPLE 2 PROJECT SKETCH – Homeowner opted to utilize the worksheet provided in Appendix C.1 to show stormwater management for DIA.

Applicant Address: Joe Homeowner 123 Site Street Anytown, PA 12345	**Brief Description of Project:** Construction of 2,000 sq. ft. (40' x 50') single-family home with 500 sq. ft. driveway (10' x 50') and 800 sq. ft. stone patio (20' x 40'). The back half of the house discharges to rainspouts underground.				
Nearest waterbody: Tributary to Mill Creek	**No more than 1,250 sq. ft. can discharge to one point on the surface.** **Number of surface discharge points required:** 3				
Total Proposed Impervious Area (A): 3,300 sq. ft. **Total Earth Disturbance:** 6,000 sq. ft.	**Discharge Point 1:** Front of Home **Area:** 1,000 sq. ft.	**Discharge Point 2:** Driveway **Area:** 500 sq. ft.	**Discharge Point 3:** Patio **Area:** 800 sq. ft.	**Discharge Point 4:** N/A **Area:** N/A	**Discharge Point 5:** N/A **Area:** N/A
Are rainspouts discharged underground? (Y/N) Yes **If yes, contributing impervious area (B):** 1,000 sq. ft.	**Pervious Path Length:** 30 ft	**Pervious Path Length:** 50 ft	**Pervious Path Length:** 40 ft	**Pervious Path Length:** N/A	**Pervious Path Length:** N/A
Total Impervious Area Discharged on Surface (A) – (B): 3,300 – 1,000 = 2,300 sq. ft.	**Pervious Path Slope <10%? (Y/N)** Yes	**Pervious Path Slope <10%? (Y/N)** Yes	**Pervious Path Slope <10%? (Y/N)** Yes	**Pervious Path Slope <10%? (Y/N)** N/A	**Pervious Path Slope <10%? (Y/N)** N/A

Project sketch:



EXAMPLE 3 STORMWATER MANAGEMENT PERMIT APPLICATION

Applicant Name, Address, Phone Number and Email:	Nature of Activity (i.e. driveway, single-lot structure, parking lot, road, trail, subdivision, etc.):
Joe Homeowner 123 Site Street Anytown, PA 12345 570-788-1234 – joeh@ptd.net	Construction of single-family home, driveway, and stone patio

Total Proposed Impervious Area (I) (sq. ft.): 3,300 square feet

Total Proposed Earth Disturbance (ED) (sq. ft.): 6,000 square feet

Level 1: (I) is between 250 sq. ft. and 1,000 sq. ft. or (ED) is between 500 sq. ft. and 5,000 sq. ft.

Level 2: (I) is between 1,000 sq. ft. and 5,000 sq. ft. or (ED) is between 5,000 sq. ft. and 10,000 sq. ft.

Complete and attach worksheet contained in Appendix C.1/E → Is information attached? No / Yes (Yes)

Level 3: (I) is between 5,000 sq. ft. and 10,000 sq. ft. or (ED) is between 10,000 sq. ft. and 20,000 sq. ft.

Complete and attach worksheet contained in Ordinance Appendix D → Is worksheet attached? No / Yes

Level 4: (I) is greater than 10,000 sq. ft. or (ED) is greater than 20,000 sq. ft.

Complete and submit SWM Site Plan in accordance with Ordinance Article IV → Is a SWM Site Plan included? No / Yes

Show on the accompanying sketch that adverse downstream stormwater impacts are not created or worsened, and that additional stormwater runoff will not discharge towards adjacent property

All requirements of the Ordinance have been met. Applicant Signature Joseph Homeowner Date: 6/30/2010

FOR REVIEWER ONLY

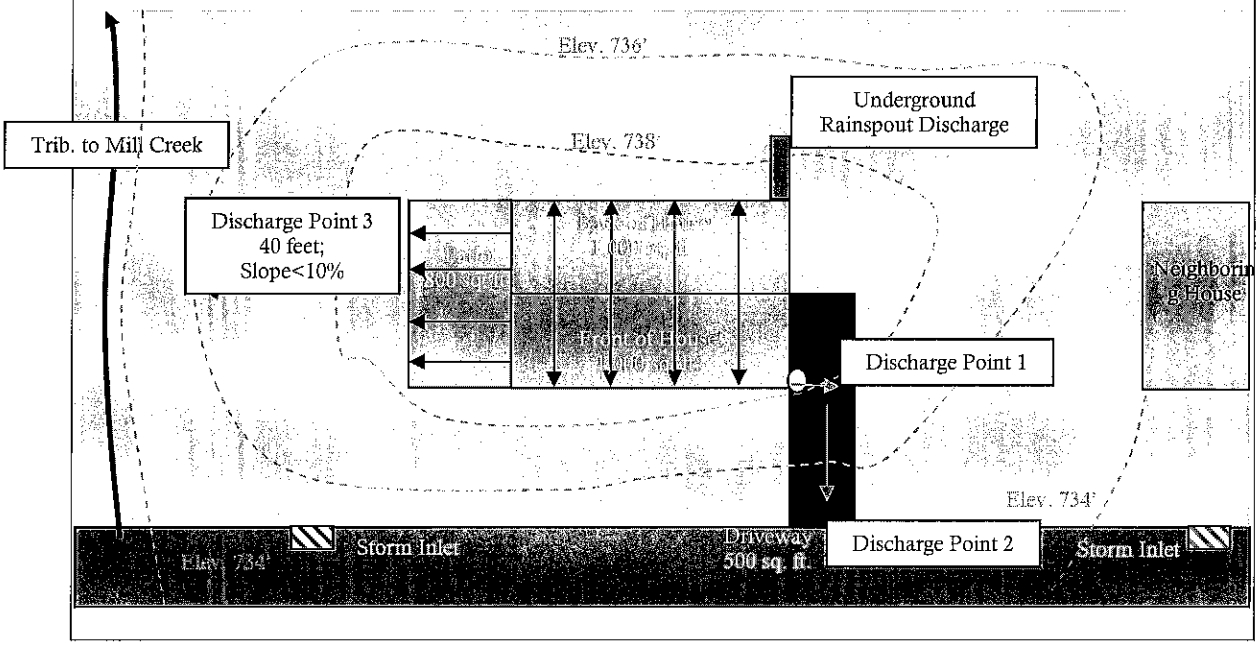
This stormwater management permit application has been (APPROVED) DENIED (circle one)

Reviewed by (print): Municipal Official Reason for Denial: Rainspout discharges to driveway, and driveway discharges to street

EXAMPLE 3 PROJECT SKETCH – Homeowner opted to utilize the worksheet provided in Appendix C.1 to show stormwater management for DIA.

Applicant Address: Joe Homeowner 123 Site Street Anytown, PA 12345	**Brief Description of Project:** Construction of 2,000 sq. ft. (40' x 50') single-family home with 500 sq. ft. driveway (10' x 50') and 800 sq. ft. stone patio (20' x 40'). The back half of the house discharges to rainspouts underground.				
Nearest waterbody: Tributary to Mill Creek	**No more than 1,250 sq. ft. can discharge to one point on the surface.** **Number of surface discharge points required:** 3				
Total Proposed Impervious Area (A): 3,300 sq. ft. **Total Earth Disturbance:** 6,000 sq. ft.	**Discharge Point 1:** Front of Home **Area:** 1,000 sq. ft.	**Discharge Point 2:** Driveway **Area:** 500 sq. ft.	**Discharge Point 3:** Patio **Area:** 800 sq. ft.	**Discharge Point 4:** N/A **Area:** N/A	**Discharge Point 5:** N/A **Area:** N/A
Are rainspouts discharged underground? (Y/N) Yes **If yes, contributing impervious area (B):** 1,000 sq. ft.	**Pervious Path Length:** N/A	**Pervious Path Length:** N/A	**Pervious Path Length:** 40 ft	**Pervious Path Length:** N/A	**Pervious Path Length:** N/A
Total Impervious Area Discharged on Surface (A) – (B): 3,300 – 1,000 = 2,300 sq. ft.	**Pervious Path Slope <10%? (Y/N)** N/A	**Pervious Path Slope <10%? (Y/N)** N/A	**Pervious Path Slope <10%? (Y/N)** Yes	**Pervious Path Slope <10%? (Y/N)** N/A	**Pervious Path Slope <10%? (Y/N)** N/A

Project sketch:



APPENDIX C.1 – LEVEL 2 APPLICATION (OPTION #1)

DISCONNECTED IMPERVIOUS AREA (DIA) AND WORKSHEET

When a regulated activity creates impervious areas between 1,000 sq. ft. and 5,000 sq. ft., or total earth disturbance between 5,000 and 10,000 sq. ft., the stormwater management requirements follow Appendix C.1 – Disconnected Impervious Areas (DIAs), of this Ordinance. If site conditions prevent the requirements of Appendix C.1 from being met, then the first 1 inch of runoff shall be captured and controlled in a manner consistent with Appendix E – Stormwater Management for Small Projects, of this Ordinance.

When rooftop or pavement runoff is directed to a pervious area that allows for infiltration, filtration, and increased time of concentration, the contributing rooftop or pavement area may qualify as a Disconnected Impervious Area (DIA). A rooftop or pavement area is considered to be a DIA if it meets the requirements listed below:

- The overland flow path (pervious area serving as BMP) from discharge area has a positive slope of approximately 10% or less;
- The length of overland flow path (pervious area serving as BMP) is greater than 20 feet.
- The 20 foot minimum length of pervious overland flow path for a driveway shall be waived in the area of the driveway connection point to the existing roadway. (I.e. Areas where it is physically impossible to provide a 20 foot pervious overland flow path for the entire driveway cross-section). Note: All areas of the driveway shall be cross-sloped toward pervious areas.

If the discharge is concentrated at one or more discrete points, no more than 1,250 square feet of impervious area may discharge to any one point. In addition, a gravel strip or other spreading device is required for concentrated discharges. For non-concentrated discharges along the edge of the pavement, this requirement is waived; however, there must be a provision for the establishment of vegetation along the pavement edge and temporary stabilization of the area until vegetation becomes stabilized.

If rainspouts are discharged underground to provide infiltration, the portion of the impervious area draining to those rainspouts is waived from the DIA discharge requirements. Rainspouts discharged underground which are directly connected to a storm sewer system are not waived from the DIA requirements. Prior to any rainspout being allowed to be discharged underground to provide infiltration the suitability of the existing soil in the area of the proposed infiltration must be demonstrated by the applicant.

Sump pump, roof drains (rainspouts) and foundation drains must comply with Section 301.Q of the Ordinance.

The technical requirements of this Appendix C.1 can be modified at the discretion of the Borough Engineer if the applicant can clearly demonstrate that no adverse downstream stormwater impact is being created or worsened by the modification that is granted.

Applicant must provide a sketch of the proposed project in the space provided below the Worksheet C.1 or on a separate plan sheet if additional space is required. The following items, at a minimum, must be provided on the Level 2 Sketch:

1. The name and address of the property owner and the person that completed the sketch.
2. All existing structures, existing roadways, existing waterways and existing stormwater management facilities within 50 feet of site.
3. The site property lines and the names of the adjoining property owners.
4. The proposed driveway location, dimensions and surface type.
5. The proposed building location, dimensions, and direction of roof slopes.
6. The direction and approximate percent of the land and roof slopes at all grade breaks.
7. A north arrow, drawing scale and date.
8. The location of all existing and proposed underground utilities including septic and well locations.
9. The location and dimensions of all proposed stormwater management facilities.
10. The discharge point of all stormwater management facilities including roof drains, foundation drains and sump pump drains.

See Level 2 Sketch examples provided for additional information.
The above items must be provided, at a minimum, for all existing lots governed by a previous Land Development or NPDES Permit Approval.

Note: The applicant must construct all structures, driveways, stormwater management facilities and discharge points as depicted on the sketches provided to the Borough. Any deviation from the sketches without prior approval from White Haven Borough may be considered a violation of the White Haven Borough Stormwater Management Ordinance and may subject the applicant to the penalties of the Ordinance and/or the revocation of the Stormwater Management Permit.

Worksheet C.1 – Disconnected Impervious Area as a BMP - Level #2 (Option 1).

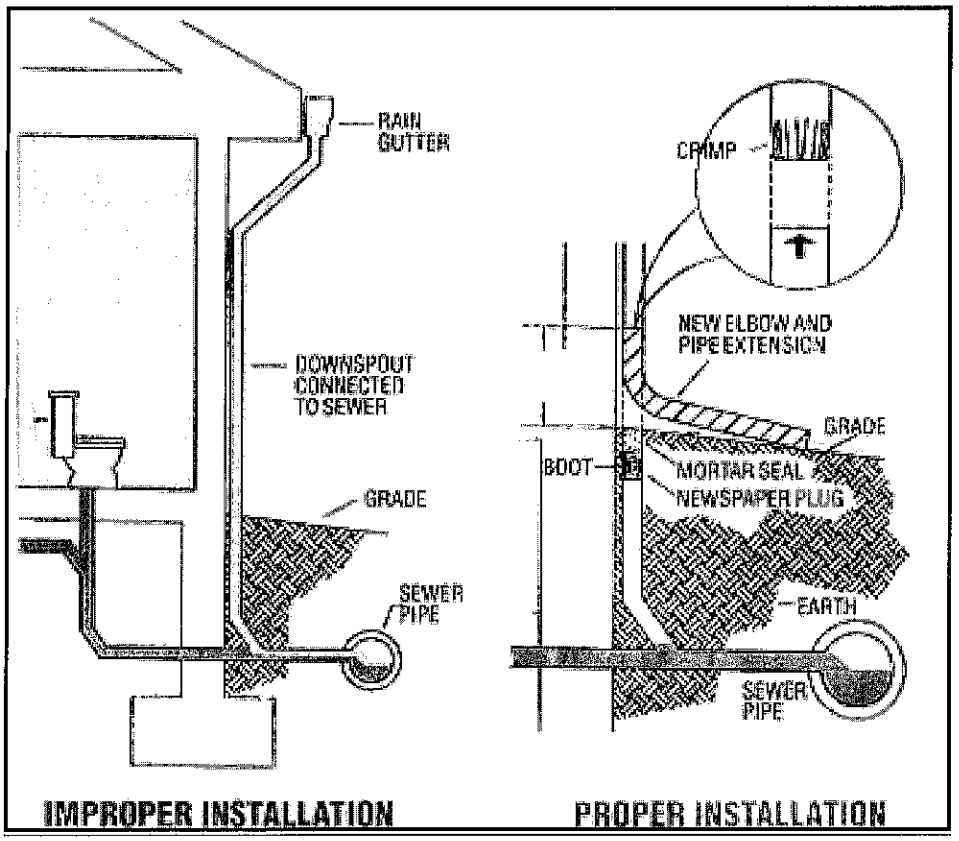
Applicant Address:	**Brief Description of Project:**				
Nearest waterbody:	**No more than 1,250 sq. ft. can discharge to one point on the surface. Number of discharge points required:**				
Total Proposed Impervious Area (A):	**Discharge Point 1**	**Discharge Point 2**	**Discharge Point 3**	**Discharge Point 4**	**Discharge Point 5**
Total Earth Disturbance:	**Area:**	**Area:**	**Area:**	**Area:**	**Area:**
Are rainspouts discharged underground? (Y/N) **If yes, contributing impervious area (B):**	**Pervious Path Length:**	**Pervious Path Length:**	**Pervious Path Length:**	**Pervious Path Length:**	**Pervious Path Length:**
Total Impervious Area Discharged on Surface (A) – (B):	**Pervious Path Slope <10%? (Y/N)**	**Pervious Path Slope <10%? (Y/N)**	**Pervious Path Slope <10%? (Y/N)**	**Pervious Path Slope <10%? (Y/N)**	**Pervious Path Slope <10%? (Y/N)**

Provide Level 2 Sketch of project below or on a separate sheet if necessary. See minimum requirements for Level 2 Sketch in Appendix C.1.

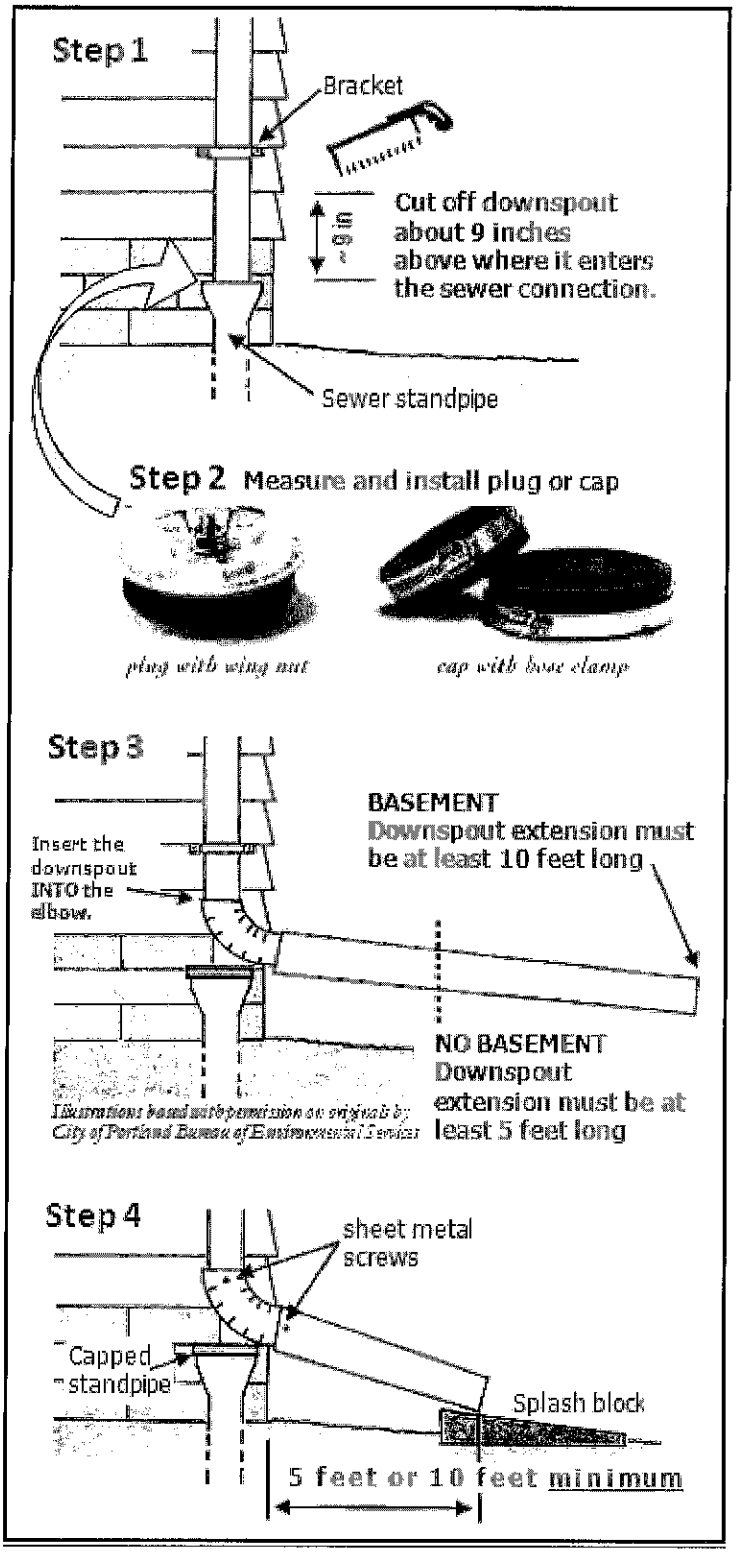
APPENDIX C.2

RAINSPOUT DISCONNECTION FROM SANITARY SEWER SYSTEMS REQUIREMENT

When roofs are being replaced, rainspouts must be disconnected from sanitary sewer systems. The following guidance is provided to enforce this requirement as part of this Ordinance, and is subject to the White Haven Borough Engineer's discretion. When rainspouts are disconnected from sanitary sewer systems, it must be shown that adverse stormwater impacts are not created downstream.



Source of image: www.munciesanitary.org/stormwater-managment



Source of image: rainwise.seattle.gov/solution_brochures

APPENDIX D – LEVEL 3 APPLICATION

PROJECTS MEETING REQUIREMENTS IN SECTION 303 SUBSECTION B

When a regulated activity creates impervious areas between 5,000 sq. ft. and 10,000 sq. ft., or total earth disturbance between 10,000 and 20,000 sq. ft., the stormwater management requirements follow Section 303 Subsection B of this Ordinance.

Section 303 Subsection B is duplicated below:

B. When CG-1 guidelines are not used, the *Simplified Method* (CG-2 in the BMP Manual[1]) has been modified to accommodate 2" of permanently removed runoff volume. This method (provided below) is independent of site conditions and should be used if the *Design Storm Method* is not followed. For new impervious surfaces:

1. The first 2 inches 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.

2. Wherever possible, infiltration facilities should be designed to accommodate infiltration of the entire permanently removed runoff; however, in all cases at least the first 0.5 inch of the permanently removed runoff should be infiltrated.

3. Facilities, to the greatest extent possible and subject to the White Haven Borough Engineer's discretion, shall be designed to drain the permanently removed runoff volume in a period no less than 24 hours and no greater than 72 hours.

4. Runoff volume in excess of 2 inches shall be safely conveyed to existing stormwater collection systems or streams, in the direction of the existing drainage course.

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

Appendix D Worksheet – Level #3 Application

<table>
<tr><td>Applicant Address:</td><td colspan="3">Brief Description of Project:</td></tr>
<tr><td>Nearest waterbody:</td><td colspan="3">Permanently Removed Volume = (2 inches / 12) x (Impervious Area)
=</td></tr>
<tr><td>Total Proposed Impervious Area:</td><td colspan="3">A Factor of Safety of 2 is applied to the Tested Infiltration Rate.
Design Infiltration Rate = Tested Infiltration Rate / 2
=</td></tr>
<tr><td>Total Earth Disturbance:</td><td colspan="3">Components of the project may be directed to multiple facilities.

Number of facilities used:</td></tr>
<tr><td rowspan="5">Soil Testing Method:</td><td>Facility #1</td><td>Facility #2</td><td>Facility #3</td></tr>
<tr><td>Component of Project:

Volume Collected:</td><td>Component of Project:

Volume Collected:</td><td>Component of Project:

Volume Collected:</td></tr>
<tr><td rowspan="4">Tested Infiltration Rate (in/hr):</td><td>Type of Facility:

Volume of Facility*:

Area of Facility:

Depth of Facility:</td><td>Type of Facility:

Volume of Facility*:

Area of Facility:

Depth of Facility:</td><td>Type of Facility:

Volume of Facility*:

Area of Facility:

Depth of Facility:</td></tr>
<tr><td rowspan="4">Additional Calcs/Notes:</td><td>Drawdown Time = Depth of Facility / Design Infiltration Rate
=</td><td>Drawdown Time = Depth of Facility / Design Infiltration Rate
=</td><td>Drawdown Time = Depth of Facility / Design Infiltration Rate
=</td></tr>
<tr><td>Loading Ratio = Impervious Area Controlled : Area of Facility =</td><td>Loading Ratio = Impervious Area Controlled : Area of Facility =</td><td>Loading Ratio = Impervious Area Controlled : Area of Facility =</td></tr>
<tr><td>Existing Discharge Point (Inlet/Sewer/Stream):</td><td>Existing Discharge Point (Inlet/Sewer/Stream):</td><td>Existing Discharge Point (Inlet/Sewer/Stream):</td></tr>
<tr><td>Discharge Method for Runoff in Excess of 2":

Capacity**:</td><td>Discharge Method for Runoff in Excess of 2":

Capacity**:</td><td>Discharge Method for Runoff in Excess of 2":

Capacity**:</td></tr>
<tr><td colspan="4">*Infiltration facilities with stone beds: 40% void space, multiply volume in stone portion by 0.4.
Calculations:</td></tr>
<tr><td colspan="4">**If a grass spillway is used: Capacity (cfs) = 2.5 x Length x Freeboard$^{1.5}$
**If an orifice structure is used: Capacity (cfs) = 0.6 x Orifice Area x (2 x 32.2 x Flow Depth Above Orifice)$^{0.5}$
Capacity Calculations:</td></tr>
</table>

Example: A doctor's office is proposed for a site. The building is 5,000 sq. ft. and the parking lot is 3,000 sq. ft.

<table>
<tr><td>Applicant Address:
Dr. Office
123 Site Street
Anytown, PA 12345</td><td colspan="3">Brief Description of Project: A proposed doctor's office consisting of 5,000 sq. ft. building (50' x 100') and 3,000 sq. ft. parking lot (30' x 100'). The building drains to the back of the property to an infiltration facility, and the parking lot drains to an infiltration facility adjacent the parking lot.</td></tr>
<tr><td>Nearest waterbody:

Trib. to Mill Creek</td><td colspan="3">Permanently Removed Volume = (2 inches / 12) x (Impervious Area)
= (2 inches / 12) x (8,000 sq. ft.)
= 1,333 cu. ft.</td></tr>
<tr><td rowspan="2">Total Proposed Impervious Area:
8,000 sq. ft.

Total Earth Disturbance:
12,000 sq. ft.</td><td colspan="3">A Factor of Safety of 2 is applied to the Tested Infiltration Rate.
Design Infiltration Rate = Tested Infiltration Rate / 2
= 1 in/hr / 2
= 0.5 in/hr</td></tr>
<tr><td colspan="3">Components of the project may be directed to multiple facilities.

Number of facilities used: 2</td></tr>
<tr><td rowspan="5">Soil Testing Method:

Percolation Test

Tested Infiltration Rate (in/hr):

1 in/hr

Additional Calcs/Notes:

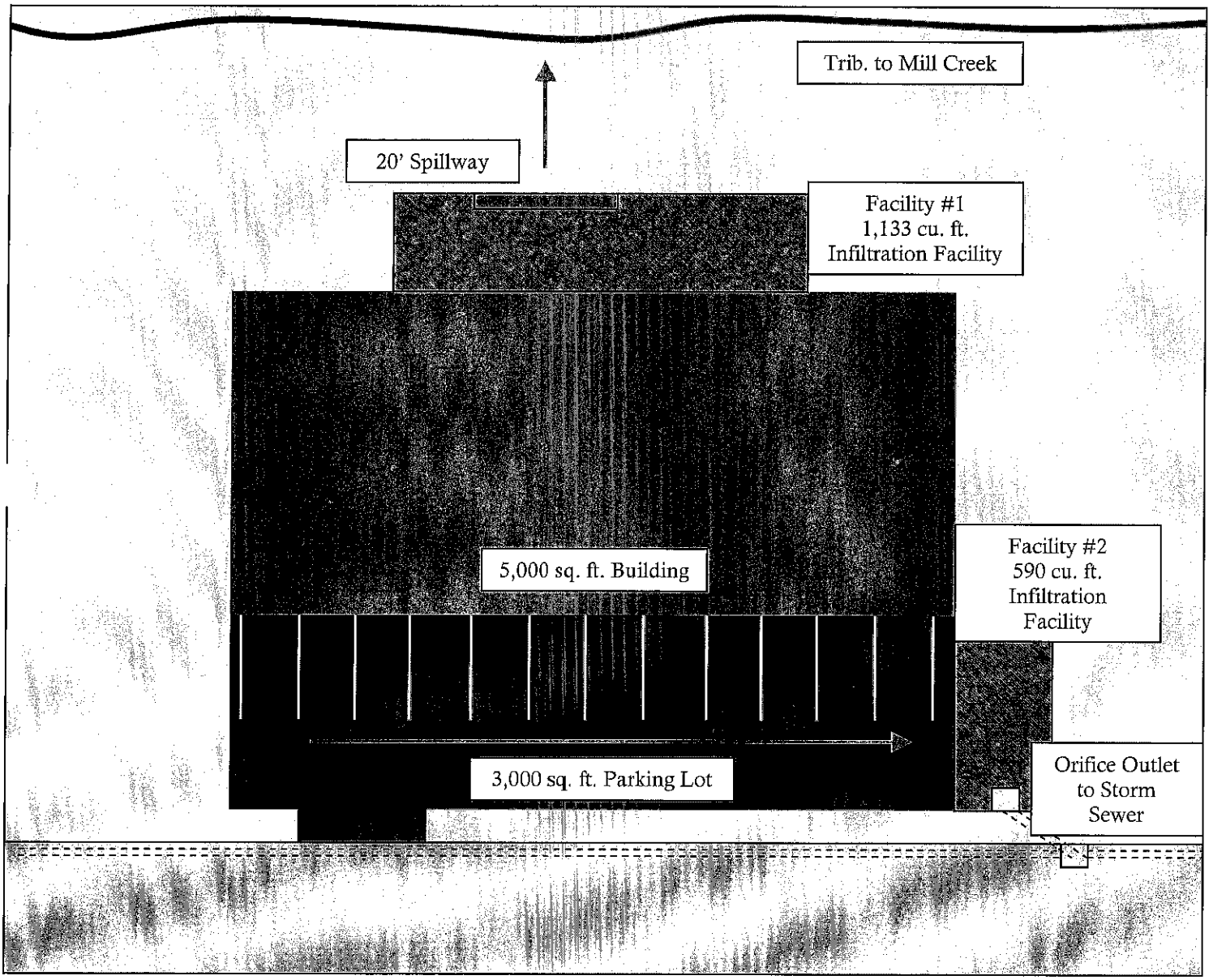
Facilities have 2:1 horizontal:vertical side slopes. Therefore, actual volumes are greater which provides some additional storage for larger events.

Both facilities have 1 foot of freeboard. This volume is additional to the volume provided in the calculations.</td><td>Facility #1</td><td>Facility #2</td><td>Facility #3</td></tr>
<tr><td>Component of Project:
Building
Volume Collected:
5,000 x 2/12 = 833 cu. ft.</td><td>Component of Project:
Parking Lot
Volume Collected:
3,000 x 2/12 = 500 cu. ft.</td><td>Component of Project:
N/A
Volume Collected:
N/A</td></tr>
<tr><td>Type of Facility:
Infiltration
Volume of Facility*:
1,133 cu. ft.
Area of Facility:
50' x 10' = 500 sq. ft.
Depth of Facility:
1 ft. stone + 1.3 ft. = 2.3 ft.</td><td>Type of Facility:
Infiltration
Volume of Facility*:
590 cu. ft.
Area of Facility:
30' x 10' = 300 sq. ft.
Depth of Facility:
½ ft. stone + 1.3 ft. = 1.8 ft.</td><td>Type of Facility:
N/A
Volume of Facility*:
N/A
Area of Facility:
N/A
Depth of Facility:
N/A</td></tr>
<tr><td>Drawdown Time = Depth of Facility / Design Infiltration Rate
=
2.3 ft. x 12 in. / 0.5 in/hr
= 55.2 hrs</td><td>Drawdown Time = Depth of Facility / Design Infiltration Rate
=
1.8 ft. x 12 in. / 0.5 in/hr
= 43.2 hrs</td><td>Drawdown Time = Depth of Facility / Design Infiltration Rate
=
N/A</td></tr>
<tr><td>Loading Ratio = Impervious Area Controlled : Area of Facility =
5,000 sq. ft. : 500 sq. ft. = 10:1</td><td>Loading Ratio = Impervious Area Controlled : Area of Facility =
3,000 sq. ft. : 300 sq. ft. = 10:1</td><td>Loading Ratio = Impervious Area Controlled : Area of Facility =
N/A</td></tr>
<tr><td>Existing Discharge Point (Inlet/Sewer/Stream):
Stream</td><td>Existing Discharge Point (Inlet/Sewer/Stream):
Inlet/Sewer System</td><td>Existing Discharge Point (Inlet/Sewer/Stream):
N/A</td></tr>
<tr><td>Discharge Method for Runoff in Excess of 2":
Spillway
Capacity**:
50 cfs</td><td>Discharge Method for Runoff in Excess of 2":
Orifice Outlet
Capacity**:
77 cfs</td><td>Discharge Method for Runoff in Excess of 2":
N/A
Capacity**:
N/A</td></tr>
<tr><td colspan="4">*Infiltration facilities with stone beds: 40% void space, multiply volume in stone portion by 0.4.
Calculations:
Facility #1 has 1 ft. of stone: 500 ft^2 x 1 ft. stone x 0.4 = 200 ft^3 in stone portion; Volume = 500 ft^3 stone + (833 – 200) = 1,133 cu. ft.
Depth = 1 ft. stone + (833 – 200) / 500 ft^2 = 1 ft. + 1.3 ft = 2.3 ft.
Facility #2 has ½ ft. of stone: 300 ft^2 x ½ ft. stone x 0.4 = 60 ft^3 in stone portion; Volume = 150 ft^3 stone + (500 – 60) = 590 cu. ft.
Depth = ½ ft. stone + (500 – 60) / 300 sq. ft. = ½ ft. + 1.3 ft. = 1.8 ft.</td></tr>
</table>

****If a grass spillway is used: Capacity (cfs) = 2.5 x Length x Freeboard$^{1.5}$**
****If an orifice structure is used: Capacity (cfs) = 0.6 x Orifice Area x (2 x 32.2 x Flow Depth Above Orifice)$^{0.5}$**
Capacity Calculations:
Facility #1 spillway: Capacity = 2.5 x (20 ft.) x (1 ft.)$^{1.5}$ = 50 cfs
Facility #2 orifice outlet: Use 1 ft. high by 2 ft. wide orifice; Capacity = 0.6 x (2 ft^2) x (2 x 32.2 x 1)$^{0.5}$ = 77 cfs

Project Sketch

Note: The applicant must construct all structures and discharge points as depicted on this sketch. Any deviation from this sketch without prior approval from White Haven Borough may be considered a violation of the White Haven Borough Stormwater Management Ordinance and may subject the applicant to the penalties of the Ordinance and/or the revocation of the Stormwater Management Permit.



APPENDIX E – LEVEL 2 APPLICATION (OPTION #2)

STORMWATER MANAGEMENT FOR SMALL PROJECTS

Applicability (Level #2 Application): Stormwater management procedures for projects between 1,000 sq. ft. and 5,000 sq. ft. of proposed impervious area or total earth disturbance between 5,000 sq. ft. and 10,000 sq. ft. for which site conditions prevent the use of Ordinance Appendix C.1 - Disconnected Impervious Area (DIA) as a BMP.

Notes:

1. This small projects document is not to be used to plan for multiple lots without obtaining prior written approval from White Haven Borough. Approvals and actions associated with this document do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other code, law or ordinance.

2. Due to the fact that the procedure outlined in Appendix C.1 – Disconnected Impervious Area (DIA) is much less burdensome than the procedure contained here in Appendix E White Haven Borough strongly recommends that an applicant make all possible attempts to comply with Appendix C.1 prior to completing the procedure outlined here in Appendix E.

E.1 Introduction

These methods have been developed to allow homeowners to comply with stormwater management criteria for new projects to meet the requirements of the Act 167 Stormwater Management Ordinance of White Haven Borough including sizing, designing, locating, and installing on-lot measures, referred to herein as "Best Management Practices" (BMPs). Pennsylvania Act 167 was authorized on October 4, 1978 (32 P.S., P.L. 864) and gave Pennsylvania municipalities the power to regulate activities that affect stormwater runoff and surface and groundwater quantity and quality.

Individual home construction projects on single-family lots which result in 1,000 sq. ft. to 5,000 sq. ft. of proposed impervious area (including the building footprint, driveway, sidewalks, and parking areas) are not required to submit formal stormwater management (SWM) site plans to White Haven Borough or County; however, they must address water quality and infiltration goals, and submit the worksheet as outlined in this small projects document. If the guidelines presented in this brochure are followed, the individual homeowner will not require professional services to comply with these water quality and infiltration goals.

Section E.2 presents options of BMPs that can be considered for on-lot stormwater management. Section E.3 describes requirements and outlines the method for designing a suitable BMP, and a description of what needs to be included on the simple sketch plan, and the Small Projects Worksheet in Table E.4. Section E.4 contains an example of how to obtain the size and dimensions of the BMPs, complete the site sketch, and prepare the Small Project Worksheet.

The stormwater management method for small projects requires:

- The first 1" of rainfall runoff from proposed impervious surfaces to be captured (see definition of captured in Article II of the Ordinance).

The purpose of this small projects document is to help reduce stormwater runoff in the community, to maintain groundwater recharge, to prevent degradation of surface and groundwater quality, and to otherwise protect water resources and public safety.

What needs to be sent to White Haven Borough?

Stormwater computations and a sketch plan must be submitted to White Haven Borough. The small projects worksheet found in Table E.4 and a simple sketch plan containing the features described in Step 5 of Section E.3 is provided as an example, or may be used for submission to White Haven Borough, and if applicable, the contractor prior to construction.

E.2 Description of BMPs

The following is a description of several types of BMPs that could be implemented. Refer to Chapter 6 of the PA BMP Manual which can be found on the PA Department of Environmental Protection's website for specifications and steps for construction for the following BMPs. A list of routine maintenance for each of the BMPs described below is also included at the end of this section.

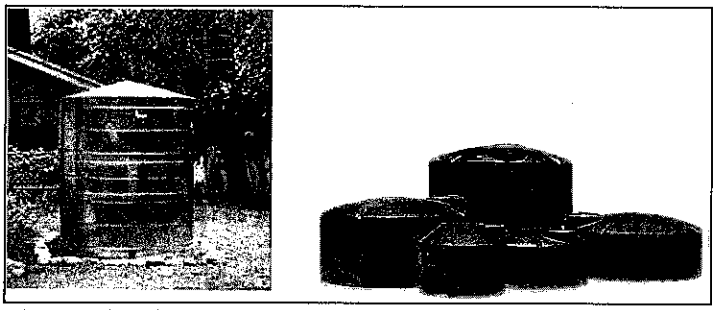
Rain Barrels/Cisterns

- Rain barrels and cisterns are large containers that collect drainage from roof leaders and temporarily store water to be released to lawns, gardens, and other landscaped areas; rain barrels are typically less than 50 gallons in size, and cisterns typically have volumes of up to 1,000 gallons or more, and can be placed on the surface or underground.

Figure E.1. Rain Barrels.

Source (left): http://www.rfcity.org/Eng/Stormwater/YourProperty/YourProperty.htm
Source (right): :http://www.floridata.com/tracks/transplantedgardener/Rainbarrels.cfm

Figure E.2. Cisterns.

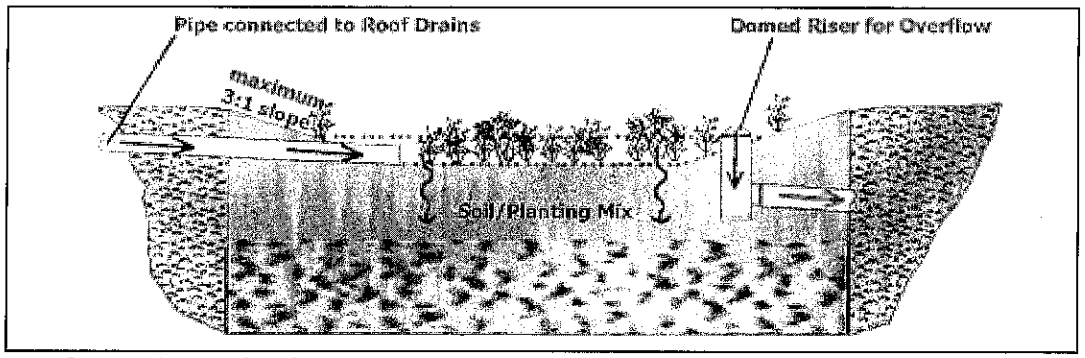


Source: Pennsylvania Stormwater Best Management Practices Manual.

Rain Garden/Bioretention Area

- A rain garden/bioretention area is an excavated depression area on the surface of the land in which native vegetation is planted to filter and use stormwater runoff; depths of 1.0 foot or less are recommended. Planting species should be native to Pennsylvania.

Figure E.3. Typical Rain Garden/Bioretention Area.



Source: Pennsylvania Stormwater Best Management Practices Manual.

Table E.1. Sample Plant List for Use in a Rain Garden/Bioretention Area.

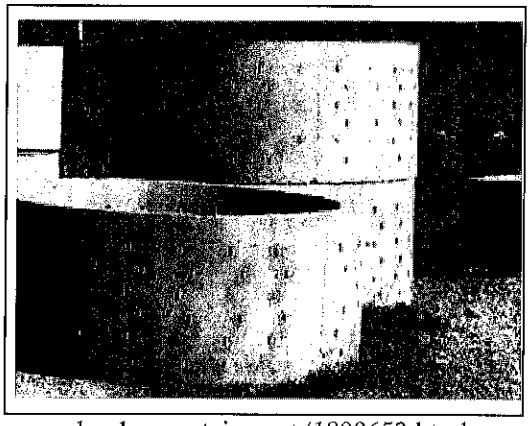
Common Name	Scientific Name	Plant Type
Red Maple	Acer rubrum	Tree
Grey Birch	Betula populifolia	Tree
Shadbush Serviceberry	Amelanchier canadensis	Tree
Eastern Cotton-wood	Populus grandidentata	Tree
Virginia Sweetspire	Itea virginica	Shrub
Red-Twig Dogwood	Cornus sericea (stolonifera) 'Arctic Fire'	Shrub
Southern Arrow-wood	Viburnum dentatum	Shrub
Black Choke Berry	Aronia melanocarpa	Shrub
Great Blue Lobelia	Lobelia siphilitica	Perennial
Dwarf Pink false aster	Boltonia asteroides 'Nana'	Perennial
White false aster	Boltonia asteroides 'Snowbank'	Perennial
Switchgrass	Panicum virgatum	Grass

Source: Pennsylvania Stormwater Best Management Practices Manual.

Dry Wells

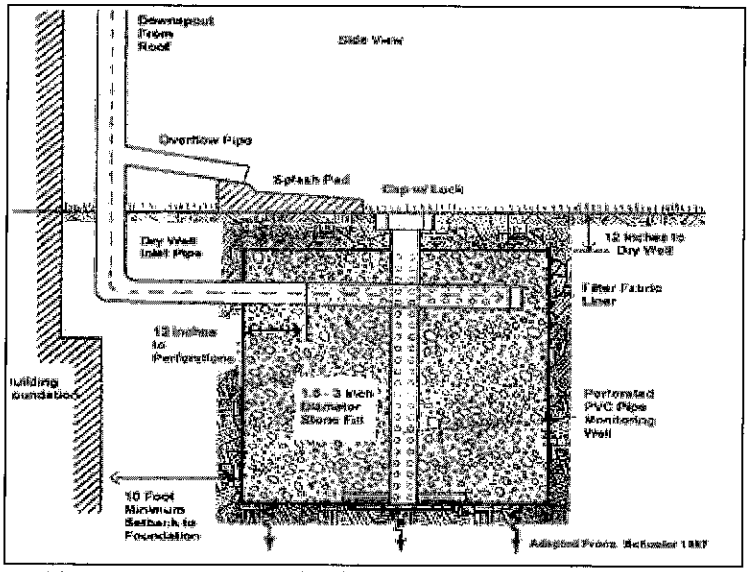
- A dry well, also referred to as a seepage pit is a subsurface storage facility that temporarily stores and infiltrates runoff from the roofs of buildings or other impervious surfaces; recommended depth of dry well is between 1.0 and 4.0 feet.
- Dry Well #1 – structural prefabricated chamber; no stone fill.
- Dry Well #2 – excavated pit filled with stone fill.

Figure E.4. Dry Well #1 – Structural Prefabricated Chamber.



Source: http://www.copelandconcreteinc.net/1800652.html

Figure E.5. Dry Well #2 – Excavated Pit Filled with Stone Fill.

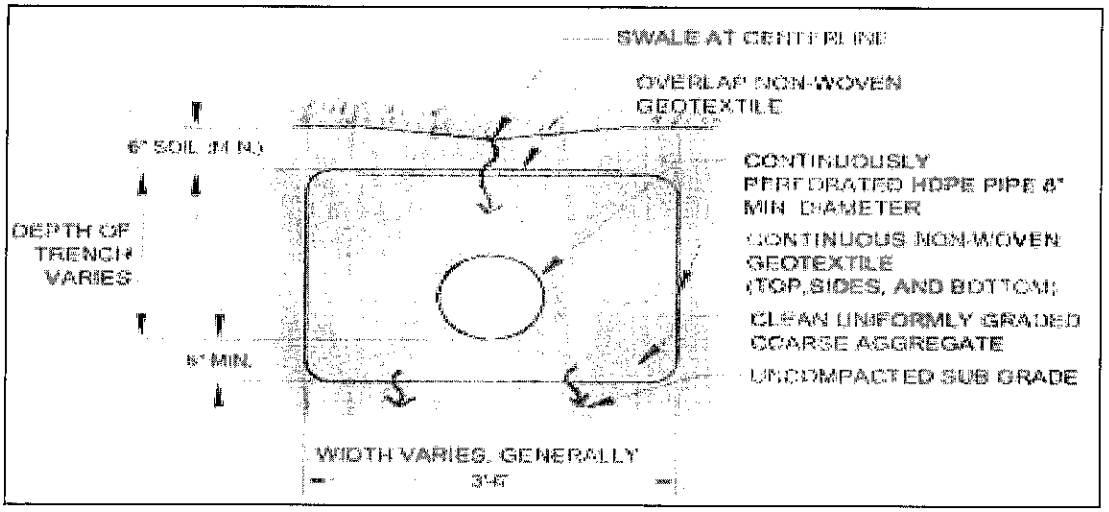


Source: http://www.seagrant.sunysb.edu/pages/BMPsForMarinas.htm

Infiltration Trench

- An infiltration trench is a long, narrow, rock-filled trench with or without a perforated pipe that receives stormwater runoff and has no outlet.
- Runoff is stored in the void space between the stones and in the pipe and infiltrates through the bottom and into the underlying soil matrix.
- The width is limited to between 3 and 8 feet, and the depth ranges from 2 to 5 feet.

Figure E.6. Infiltration Trench.



Source: Pennsylvania Stormwater Best Management Practices Manual.

Routine Maintenance for BMPs

- Vegetation along the surface of an infiltration trench should be maintained in good condition, and any bare spots should be revegetated as soon as possible.
- Vehicles shouldn't be parked or driven on an infiltration trench, and care should be taken to avoid excessive compaction by mowers.
- Any debris such as leaves blocking flow from reaching an infiltration trench or bioretention/rain garden should be routinely removed.
- While vegetation is being established, pruning and weeding may be required for a bioretention/rain garden.
- Mulch in a bioretention/rain garden needs to be re-spread when erosion is evident. Once every two to three years or after major storms the entire area may require mulch replacement.
- At least twice a year the landowner needs to inspect the bioretention/rain garden for sediment buildup and vegetative conditions.
- During periods of extended drought, the bioretention/rain garden requires watering.
- Trees and shrubs in a bioretention/rain garden need to be inspected at least twice per year by the landowner to evaluate their health. If they are in poor health, they need to be replaced.
- Dry wells need to be inspected by the landowner at least four times a year and after significant rainfalls, and debris/trash, sediment, and any other waste material need to be removed and disposed of at suitable disposal/recycling sites and in compliance with local, state, and federal waste regulations.
- For dry wells, gutters need to be regularly cleaned out, and proper connections must be maintained to facilitate the effectiveness of the dry well.
- The filter screen for the dry well that intercepts roof runoff must be replaced as necessary.
- Dry wells that are damaged need to be fixed or replaced immediately.
- If an intermediate sump box exists in conjunction with a dry well, it must be cleaned out at least once per year.
- Rain barrels and cisterns need to be cleared of debris routinely at least every three months and after significant storms to allow stormwater from gutters to enter them.
- Gutters that directly convey rain water to dry wells, rain barrels, and cisterns need to be routinely cleared of trash and debris at least every three months and after significant storms.
- Rain barrels and cisterns must be kept covered.
- Rain barrels and cisterns should be routinely emptied so that they are only ¼ of the way full to allow for storage of additional rainwater.
- Overflow outlets from rain barrels and cisterns must be kept free and clear of debris.
- Rain barrels and cisterns that are damaged need to be fixed or replaced immediately.

E.3. Determination of BMPs and Volume Requirements

All proposed impervious areas must be included in the determination of the amount of new impervious areas and the size of proposed BMPs needed to control stormwater.

Proposed impervious areas on an individual residential lot include:

- Roof area
- Pavement
- Sidewalks
- Driveways
- Patios
- Porches
- Permanent pools
- Parking areas

Sidewalks, driveways, or patios that are constructed with gravel or pervious pavers that will not be converted to an impervious surface in the future need not be included in this calculation. Therefore, the amount of proposed impervious area can be reduced for proposed driveways, patios, and sidewalks through the use of gravel, pervious pavement, and turf pavers. All proposed impervious areas must be constructed so that runoff is conveyed to a BMP; no runoff can be directed to storm sewers, inlets, or other impervious areas (i.e., street).

All new construction should incorporate design techniques that include: minimizing the amount of land disturbance, reducing impervious cover, disconnecting gutters and directing runoff to vegetated areas to infiltrate, and redirecting the flow of runoff from impervious driveways to vegetated areas instead of to the street or gutter.

Below are the steps that must be undertaken to meet the Ordinance requirements. The results obtained for each step must be included in the Small Projects Worksheet found in Table E-4:

STEP 1 – Determine the total area of all proposed impervious surfaces (square feet) that will need to drain to one or more BMPs.

STEP 2 – Determine locations where BMPs need to be placed, and the contributing impervious area "***I***" (square feet) to each.

STEP 3 – Select the BMPs to be used and determine the requirements of each from Section E.3.

STEP 4 – Obtain the required storage volume "***V***" (cubic feet) and surface area "***A***" (square feet) needed for each of the proposed BMPs from the appropriate heading below.

Note: all calculations are based on 1 inch of rainfall.

For Rain Barrels/Cisterns

- The typical volume of a rain barrel is less than 50 gallons; if a greater volume is required, more than one rain barrel will be needed or a cistern may be used.
- For calculations, assume the rain barrel is already 25% full.
- Calculate volume in Cubic Feet:

$$V_{cf} = (1 \text{ inch} \times 1/12 \times I) / 0.75$$

- Convert to Gallons:

$$V_{gal} = V_{cf} \times 7.48$$

For Rain Gardens/Bioretention or Dry Well #1:

- Rain gardens and bioretention areas are only used for depths less than or equal to 1.0 feet; a dry well #1 is used for depths between 1.0 and 4.0 feet.
- Select the depth "***D***" (feet) for the facility.
- For calculations, assume the facility is empty (0% full).
- Calculate volume in Cubic Feet:

$$V_{cf} = (1 \text{ inch} \times 1/12 \times I)$$

- Calculate surface area of the facility in Square Feet:

$$A_{sf} = V_{cf} / D$$