Ordinance No. 19-03

Bellevue Borough
Allegheny County

PROPOSED STORMWATER MANAGEMENT ORDINANCE

Final Draft
Last Revised: 12/06/2018

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Article I - General Provisions

Section 101: Short Title

A. This Ordinance shall be known and may be cited as the "Borough of Bellevue Stormwater Management Ordinance."

Section 102: Statement of Findings

A. The governing body of the Borough finds that:

B. Objectives. The provisions of this Ordinance are intended to achieve the following specific objectives:

1) 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 nonpoint source pollution of water resources.

2) 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.

3) 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.

4) The use of green infrastructure (GI) and low impact development (LID) are intended to address the root cause of water quality impairment by using systems and practices which use or mimic natural processes to: 1) infiltrate and recharge, 2) evapotranspire, and/or 3) harvest and use precipitation near where it falls to earth. Green infrastructure practices and LID contribute to the restoration or maintenance of pre-development hydrology.

5) 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

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

1) Comply with the 2018 Allegheny County Act 167 Stormwater Management Plan.

2) 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.

3) Preserve the natural drainage systems as much as possible.

4) Manage stormwater runoff close to the source, reduce runoff volumes and mimic predevelopment hydrology.

5) Provide procedures and performance standards for stormwater planning and management.

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

7) Prevent scour and erosion of stream banks and streambeds.

8) Provide proper operation and maintenance of all SWM BMPs that are implemented within the Borough.

9) Provide standards to meet NPDES permit requirements.

Section 104: Statutory Authority

A. The 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, and/or the Act of October 4, 1978, P.L. 864 (Act 167), 32 P.S. Section 680.1, et seq., as amended, The Stormwater Management Act.

Section 105: Applicability

A. All Regulated Activities within the Borough, and all stormwater runoff entering the Borough's separate storm sewer system from lands within and tributary to the Municipal boundary, including the sources of such runoff, and all activities that may affect stormwater runoff, including land development and earth disturbance activity, are subject to regulation by this Ordinance. Activities regulated by this Ordinance include, but are not limited to, the following:

1) Land Development;

2) Subdivision;

3) Construction of new or additional impervious or semi-pervious surfaces, to include driveways and parking lots, for example;

4) Construction of new buildings or additions to existing buildings;

5) Installation, maintenance, and alterations to stormwater management facilities or appurtenances thereto;

6) Any Earth Disturbances or other activities that involve the alteration or development of land, or removal of trees and vegetation in a manner that may affect post-construction stormwater runoff;

7) New earth disturbance activities on previously developed properties, which includes properties that have been graded, altered, and/or compacted, whether or not any structures have been built;

8) The demolition or partial demolition of an existing facility; however, such work required for building or site maintenance, parking lot resurfacing, roof replacement, building exterior repairs, etc., shall not constitute Regulated Activities unless deemed so by the Borough;

9) Construction of new buildings or facilities in existing impervious or semi-pervious areas, including the full or partial redevelopment of existing properties.

Section 106: Repealer

A. The Borough, with the adoption of this Ordinance, hereby repeals Chapter 230 (Stormwater Management) of the Borough Code and any other ordinance provision(s) 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

A. 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.

Section 109: Erroneous Permit

A. Any permit or authorization issued or approved based on false, misleading or erroneous information provided by an Applicant is void without the necessity of any proceedings for revocation. Any work undertaken or use established pursuant to such permit or other

authorization is unlawful. No action may be taken by a board, agency or employee of the Borough purporting to validate such a violation.

Section 110: Waivers

A. If the Municipality determines that any requirement under this Ordinance cannot be achieved for a particular regulated activity the Municipality may, after an evaluation of alternatives, approve measures other than those in this Ordinance, subject to Section 110, paragraph B. The proposed area of disturbance shall be less than one (1) acre. The request for a modification or waiver shall originate with the Landowner, shall be in writing, and shall accompany the Stormwater Management Site Plan submitted to the Municipality. The request shall provide the facts on which the request is based, the provisions of the Ordinance involved, and the proposed modification. The Designated Plan Reviewer shall review the request to determine if it meets the requirements of the Ordinance, including paragraph B below. If acceptable to the Municipality, the Municipality may grant the waiver or modification.

B. Waivers or modifications of the requirements of this Ordinance may be approved by the Municipality if enforcement will exact undue hardship because of unique physical circumstances or conditions peculiar to the land in question, provided that the modifications will not be contrary or detrimental to the public interest and will achieve the intended outcome, and that the purpose of the Ordinance is preserved. Hardship must be due to such unique physical circumstances or conditions and not to circumstances or conditions generally created by the provisions of the Stormwater Management Ordinance. Cost or financial burden shall not be considered a hardship. Modifications shall not substantially or permanently impair the appropriate use or development of adjacent property. A request for modifications shall be in writing and accompany the Stormwater Management Site Plan submission, as directed in Section 110, paragraph A above.

C. No waiver or modification of any regulated stormwater activity involving earth disturbance greater than or equal to one (1) acre may be granted by the Municipality.

Section 111: Version of Regulations and Standards

A. Any reference to a statute, regulation or standard, shall be interpreted to refer to the latest or most current version of that document.

Article II – Definitions

Section 201: General Terms

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

1) 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.

2) 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.

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

Section 202: Specific Terms

As used in this Ordinance, the following terms shall have the following meanings:

ACT 167 – The Storm Water Management Act (Act of October 4, 1978, P.L. 864 NO. 167; 32 P.S. § 680.1-680.17, as amended).

ACT 167 PLAN – The Plan for managing stormwater runoff throughout a designated watershed, adopted by Allegheny County as required by the Pennsylvania Storm Water Management Act (Act 167). Activities in Bellevue Borough are governed under the provisions of the 2018 Allegheny County Act 167 Water Management Plan.

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 the Borough for approval to engage in any regulated activity at a project site in the 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.

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.

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.

DESIGNATED PLAN REVIEWER – A Qualified Professional as defined herein, or organization such as the Allegheny County Conservation District, that has been designated by the Municipality to be the reviewer of SWM Site Plans for the Municipality, and shall be understood to be the reviewer where indicated as the Municipality within this ordinance.

DETENTION BASIN – An impoundment designed to collect and retard stormwater runoff by temporarily storing the runoff and releasing it at a predetermined rate. Detention basins are designed to drain completely in a designed period after a rainfall event, and to become dry until the next rainfall event.

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 SITE (SITE) – See Project Site.

DISTURBED AREA – An unstabilized land area where an earth disturbance activity is occurring or has occurred.

DRAINAGE SYSTEM – All facilities and natural features used for the movement of stormwater through and from a drainage area, including, but not limited to, any and all of the following; conduits, pipes and appurtenant features, channels, ditches, culverts, streets, swales, and gutters, as well as all watercourses, water bodies, and wetlands.

EARTH DISTURBANCE ACTIVITY – A construction or other human activity which disturbs the surface of the land, including, but not limited to: clearing and grubbing; grading; excavations; embankments; road maintenance; building construction; and the moving, depositing, stockpiling, or storing of soil, rock, or earth materials.

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.

GREEN INFRASTRUCTURE – Systems and practices that use or mimic natural processes to infiltrate, evapotranspire, or reuse stormwater on the site where it is generated.

GROUNDWATER – Water beneath the earth's surface that supplies wells and springs and is within the saturated zone of soil and rock.

GROUNDWATER RECHARGE – The replenishment of existing natural underground water supplies from precipitation or overland flow.

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 surface that prevents the infiltration of water into the ground. Impervious surfaces (or areas) shall include, but not be limited to: roofs; additional indoor living spaces, patios, garages, storage sheds and similar structures; and any new streets or sidewalks. Decks, parking areas, and driveway areas are not counted as impervious areas if they do not prevent infiltration.

INVASIVE SPECIES – DCNR defines invasive plants as those species that are not native to the state, grow aggressively, and spread and displace native vegetation. (see http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr_010314.pdf for a list of invasive species.

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) – Inclusive of any or all of the following meanings: (i) 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 buildings or (b) the division or allocation of land or space 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; (ii) any subdivision of land; (iii) development in accordance with Section 503(1.1) of the PA Municipalities Planning Code.

LOW IMPACT DEVELOPMENT (LID) – Site design approaches and small-scale stormwater management practices that promote the use of natural systems for infiltration, evapotranspiration, and reuse of rainwater. LID can be applied to new development, urban retrofits, and revitalization projects. LID utilizes design techniques that infiltrate, filter, evaporate, and store runoff close to its source. Rather than rely on costly large-scale conveyance and treatment systems, LID addresses stormwater through a variety of small, cost-effective landscape features located on-site.

MUNICIPALITY – Borough of Bellevue, Allegheny County, Pennsylvania.

NATIVE VEGETATION – Plant species that have historically grown in Pennsylvania and are not invasive species as defined herein.

MS4 – Municipal Separate Storm Sewer System.

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

PEAK DISCHARGE – The maximum rate of stormwater runoff from a specific storm event.

PERVIOUS AREA – Any area not defined as impervious.

PROJECT SITE – The specific area of land where any regulated activities in the 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 this Ordinance.

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.

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.

RELEASE RATE – The percentage of existing conditions peak rate of runoff from a site or subarea to which the proposed conditions peak rate of runoff must be reduced to protect downstream areas.

RELEASE RATE DISTRICT – A watershed or portion of a watershed for which a release rate has been established by an adopted Act 167 Stormwater Management Plan.

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).

RIPARIAN BUFFER – A permanent vegetated area of trees and shrubs located adjacent to streams, lakes, ponds and wetlands.

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 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; and infiltration facilities.

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.

STREAM - A channel or conveyance of surface water having a defined bed and banks, whether natural or artificial, with perennial or intermittent flow.

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.

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.

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Article III – Stormwater Management Standards

Section 301: General Requirements

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

   1) Preparation and implementation of an approved SWM Site Plan is required.

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

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

C. These standards apply to the landowner and any person engaged in regulated activities.

D. The Borough may, after consultation with DEP, 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), No. 363-2134-008 (April 15, 2000), as amended and updated.

F. 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, the total impervious area on the parcel is subject to the requirements of this Ordinance, except that the volume controls in Section 303 and the peak rate controls of Section 304 do not need to be retrofitted to existing impervious areas that are not being altered by the proposed regulated activity.

   4) Gravel surfaces in the existing (pre-development) condition are to be considered pervious.

   5) Gravel surfaces in the proposed (post-development) condition are to be considered impervious.

G. Stormwater flows onto adjacent property shall not be created, increased, decreased, relocated, or otherwise altered without written notification of the adjacent property owner(s) by the developer. Notification shall include a description of the proposed development and the stormwater flows that are being created, increased, decreased, relocated, impeded, or otherwise altered. Adjacent property shall at a minimum include any property having a shared boundary with the subject property of the SWM Site Plan, however, if in the judgement of the Designated Plan Reviewer additional properties are being affected, additional notifications may be required. Proof of notification (signed postal receipt for example) shall be included as part of the SWM Plan submission to the Municipality. Such stormwater flows shall be subject to the requirements of this Ordinance.

H. All regulated activities shall include such measures as necessary to:

1) Protect health, safety, and property;

2) Meet the water quality goals of this Ordinance by implementing measures 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 Pennsylvania Stormwater Best Management Practices Manual (BMP Manual) 1. If methods other than green infrastructure and LID methods are proposed to achieve the volume and rate controls required under this Ordinance, the SWM Site Plan must include a detailed justification, acceptable to the Designated Plan Reviewer, demonstrating that the use of LID and green infrastructure is not practicable.

I. The design of all facilities over karst shall include an evaluation of measures to minimize adverse effects.

J. 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.

K. Normally dry, open top, storage facilities should completely drain both the volume control and rate control capacities over a period of time not less than 24 and not more than 72 hours from the end of the design storm.

L. 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.

M. Various BMPs and their design standards are listed in the BMP Manual, subject to any requirements of this Ordinance.

Section 302: Exemptions

A. Some activities may be exempted from the full requirements of this Ordinance as detailed below. Unless specifically noted as automatic, exemption requests must be submitted to and approved by the Borough. Any exemption granted shall apply only to the portions of this Ordinance specifically noted. All other stormwater management design elements, such as a storm sewer system, culverts, erosion and sedimentation controls, etc., shall still be required.

B. There shall be no exemptions for activities resulting in a cumulative earth disturbance exceeding 1 acre.

C. Activities that do not require a Site Plan or Land Development Plan approval from the Borough may be exempt, subject to the review of the exemption request by the Borough.

D. Individual detached single-family homes that are not part of an existing or planned subdivision with an approved SWM Site Plan shall be exempt from the requirement to submit a complete SWM Site Plan.

E. The subdivision of one single-family detached residential lot into two such lots, or a subdivision including only the revision of the lot line(s) between two such lots, shall be exempt from the requirement to submit a complete SWM Site Plan. Should the Borough suspect that repeated such subdivisions are being used to circumvent the planning requirement, the Borough reserves the right to revoke the exemption.

F. The work required to return a property to its previous condition following a loss resulting from an act of nature, fire, or accident, etc., shall be exempt from the requirement to submit a complete SWM Site Plan.

G. Emergency maintenance work performed for the protection of public health, safety, and welfare may be exempted from the requirements in this Ordinance to obtain approval for a SWM Site Plan prior to the commencement of the activity. A written description of the scope and extent of such work shall be submitted to the Borough within two (2) calendar days of the commencement of the activity. If the Borough deems that the work does not constitute an emergency, then the work shall cease immediately and not resume until a SWM Site Plan is submitted to and approved by the Borough. The purpose of this exemption is to allow emergency work to proceed immediately only. All work must otherwise comply with all applicable provisions of this Ordinance.

H. Maintenance work performed on an existing stormwater management facility that was installed in accordance with plans and specifications approved by the Borough may be exempted from the requirements of this Ordinance. The facility owner shall notify the Borough a minimum of three (3) working days in advance, with such notice to include a description of the work to be performed. All work should be completed in accordance with the approved Operation and Maintenance Plan for the facility and shall only be performed to bring the facility

back into conformance with the original approved Plan. Any work that would alter the configuration, capacities, or operation of the facility must be submitted to the Borough for approval.

I. Activities related solely to property maintenance, such as resurfacing an existing parking lot, replacement of existing sidewalks, roof replacement, building exterior repairs, etc., shall be automatically exempt from the requirements of this Ordinance if no additional impervious area is added as a result of the activities.

J. The use of land for home gardening for home consumption shall be automatically exempt from the requirements of this Ordinance.

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

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

M. Exemptions from any provisions of this Ordinance shall not relieve the Applicant from the requirements in Sections 301.D. through K.

N. The following activities may be exempt from the requirements to submit a complete SWM Site Plan. In all cases, however, appropriate stormwater quality BMPs must be implemented on the site where required. Exemptions will not be granted if the activity is found to contribute pollution to the Waters of the Commonwealth, or if the runoff from the activity impacts an adjacent property:repeated such subdivisions are being used to circumvent the planning requirement, the Borough reserves the right to revoke the exemption.

1) Minor Impact Activities

a) This shall apply to an activity not classified as a single-family detached home on a single lot.

b) An activity shall be classified as a “Minor Impact” if it involves less than 2,000 square feet (< 2,000 square feet) of impervious area, to include both newly created impervious area and any reconfiguration of existing impervious area, AND results in a total earth disturbance of less than 5,000 square feet (< 5,000 square feet).

c) This exemption can only be applied once for each parcel. Subsequent, or phased, regulated activities on the same or contiguous properties which result in an overall total of 2,000 square feet or greater (> 2,000 square feet) of impervious surface, or 5,000 square feet or greater (> 5,000 square feet) of earth disturbance shall be subject to the full requirements of this Ordinance.

d) The area of any existing impervious surfaces that may be permanently replaced with pervious surfaces on a project site may NOT be deducted from the area of impervious surface created/reconfigured to qualify for this exemption.

e) The Applicant shall submit a Narrative describing the project, documentation of the total proposed impervious area and disturbed area, proposed use of any BMPs on the site, including any calculations or justification for their selection, as well as the Operation and Maintenance Plan and Agreement for the facilities.

2) Vertical Extensions

a) This shall apply to an activity not classified as a single-family detached home on a single lot.

b) Such activities must involve ONLY the vertical extension of a structure or portions thereof, with an addition of the same size and shape as the structure or portion thereof directly beneath the addition, and which require no earth disturbance activities other for the construction of said addition. Appropriate erosion and sedimentation control measures must be employed during any construction activities.

3) Small Projects

a) Regulated activities involving between 2,000 square feet and 5,000 square feet of new or reconfigured impervious area AND less than one (1) acre of earth disturbance shall be considered a “Small Project” and must submit a SWM Site Plan to the Borough which shall consist of the following items and related supportive material needed to determine compliance with Sections 303 through 305. The Applicant can use the protocols in the Small Project Stormwater Management Site Plan included in Appendix C.

b) General description of proposed stormwater management techniques, including construction specifications of the materials to be used for stormwater management facilities.

c) An erosion and sediment control plan, including all reviews and letters of adequacy from the Conservation District where appropriate.

d) Limits of earth disturbance, including the type and amount of impervious area that is proposed; proposed structures, roads, paved areas, and buildings; and a statement, signed by the Applicant, acknowledging that any revision to the approved drainage plan must be approved by the Municipality, and that a revised erosion and sediment control plan must be submitted to the Municipality or Conservation District for approval.

e) All stormwater management facilities must be located on a plan and described in detail; and all calculations, assumptions, and criteria used in the design of the stormwater management facilities must be shown.

O. Roadway resurfacing and maintenance projects, which do not increase impervious area, and underground infrastructure projects are exempt from the provisions of this Ordinance, provided the activities meet the requirements of all other Municipal, State and Federal requirements.

P. The Borough may deny or revoke any exemption pursuant to this Section at any time for any project that the Borough believes may pose a threat to public health and safety or the environment.

Q. Voluntary Green Stormwater Infrastructure (GSI) retrofit projects that are solely intended to better manage runoff from existing development and are not part of new development or redevelopment, are exempt from the stormwater management provisions of this Ordinance. This does not exempt such projects from any other municipal, state, or federal regulation.

Section 303: Volume Control

A. The green infrastructure and low impact development practices provided in the BMP Manual1 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 regulated activity areas equal or less than 1 acre that do not require hydrologic routing to design the stormwater facilities, this Ordinance establishes no preference for either methodology; therefore, the Applicant may select either methodology on the basis of economic considerations, the intrinsic limitations on applicability of the analytical procedures associated with each methodology, and other factors.

B. The Design Storm Method (CG-1 in the BMP Manual1) is applicable to any size of regulated activity. This method requires detailed modeling based on site conditions.

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

   2) At least the first one inch of runoff from the net increase in 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. If the developer provides justification that the listed removal options are not feasible, and the Designated Plan Reviewer agrees, runoff shall be detained in a facility designed for a 24 to 72 hour dewatering time in an area with a dedicated stormwater system (not contributory to a combined sewer system) and shall be detained in a facility designed for a 72 hour dewatering time in an area contributory to a combined sewer system before discharge to local stormwater systems or the environment.

   3) For modeling purposes:

      a) Existing (predevelopment) nonforested pervious areas must be considered meadow in good condition.

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

C. The Simplified Method (CG-2 in the BMP Manual1) provided below is independent of site conditions and should be used if the Design Storm Method is not followed. This method is not applicable to regulated activities greater than 1 acre or for projects that require design of stormwater storage facilities. For new impervious surfaces:

   1) Stormwater facilities shall capture at least the first 2 inches of runoff from all new impervious surfaces.

   2) At least the first 1 inch 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. If the developer provides justification that the listed removal options are not feasible, and the Designated Plan Reviewer agrees, runoff shall be detained in a facility designed for a 24 hour dewatering time in an area with a dedicated stormwater system (not contributory to a combined sewer system) and shall be detained in a facility designed for a 72 hour dewatering time in an area contributory to a combined sewer system before discharge to local stormwater systems or the environment.

3) 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.

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

Section 304: Rate Controls

A. Any areas covered by a release rate map are included in Appendix A of this Ordinance.

For the 1-, 2-, 5-, 10-, 25-, and 100-year storms, the post-development peak discharge rates will follow the applicable approved release rate maps. For any areas not shown on the release rate maps, the post-development discharge rates shall not exceed the predevelopment discharge rates.

Section 305: Calculation Methodology

A. All calculations shall be consistent with the guidelines set forth in the BMP Manual, as amended herein.

B. Stormwater methods shall be selected by the design professional based on the requirements listed below and suitability of each method for a particular site. The selected methodology shall be approved by the Designated Plan Reviewer.

C. The design storm volumes to be used in the analysis of peak rates of discharge shall be as follows:

1-Yr, 24-Hr Storm –	2.00 inches
2-Yr, 24-Hr Storm –	2.50 inches
10-Yr, 24-Hr Storm –	3.61 inches
25-Yr, 24-Hr Storm –	4.31 inches
100-Yr, 24-Hr Storm –	5.71 inches

D. Other storm volumes and intensities 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[5] can be accessed at: http://hdsc.nws.noaa.gov/hdsc/pfds/.

E. Calculation of runoff volume.

1) The Rational Method shall not to be used to calculate runoff volume.
   A.
2) NRCS Rainfall-Runoff Method. This method shall be used to estimate the change in volume due to regulated activities.

3) The applicant shall submit all relevant worksheets from the Pennsylvania Stormwater Best Management Practices Manual to demonstrate the change in runoff for a 2-year storm event.

F. Calculation of peak flow rates.

1) Rational Method. This method may be used for design of conveyance facilities only. Extreme caution should be used by the design professional if the watershed has more than one main drainage channel, if the watershed is divided so that hydrologic properties are significantly different in one versus the other, if the time of concentration exceeds 60 minutes, or if stormwater runoff volume is an important factor. The combination of Rational Method hydrographs based on timing shall be prohibited.

2) NRCS Rainfall-Runoff Method. This method is recommended for design of stormwater management facilities and where stormwater runoff volume must be taken into consideration.

3) Other models as preapproved by the Designated Plan Reviewer.

G. Runoff Coefficients. The applicant shall use typical land cover values as approved by the Designated Plan Reviewer.

1) For the purposes of predevelopment peak flow rate and volume determination, 20% of existing impervious area, when present, shall be considered meadow (good condition).

2) Combining curve numbers for land areas proposed for development with curve numbers for areas unaffected by the proposed development into a single weighted curve number is not acceptable.

H. Time of Concentration. The time of concentration is to represent the average condition that best reflects the longest hydrologic route to the Point of Interest. The applicant shall delineate the flow paths used for calculating the time of concentration for the pre-developed and post-developed conditions.

1) The post-development Tc shall never be greater that the predevelopment Tc for any watershed or subwatershed. This includes when the designer has specifically used swales to reduce flow velocities. In the event that the designer believes that the post-development Tc is greater, it will still be set by default equal to the predevelopment Tc for modeling purposes.

2) The minimum Tc for any watershed shall be five minutes.

3) The designer may choose to assume a five-minute Tc for any post-development watershed or subwatershed without providing any computations.

4) The designer must provide computations for all predevelopment Tc paths. A five-minute Tc cannot be assumed for predevelopment.

I. For comparison of peak flow rates, flows shall be rounded to a tenth of a cubic foot per second (cfs).

J. The stormwater management and drainage system shall be designed to safely convey the post-development one-hundred-year storm event to stormwater detention facilities, for the purpose of meeting peak rate control.

K. All structures (culverts or bridges) proposed to convey runoff under a municipal road shall be designed to pass the fifty-year design storm with a minimum one foot of freeboard measured below the lowest point along the top of the roadway.

Section 306: Riparian Buffers

A. In order to protect and improve water quality, a Riparian Buffer Easement shall be created and recorded as part of any subdivision or land development that encompasses a Riparian Buffer. The intent of this ordinance in establishing a Riparian Buffer is to protect and improve stream water quality. The Riparian Buffer is intended to slow overland flow to the stream through the presence of native grasses, trees and shrubs, allowing infiltration/groundwater recharge; causing deposition of sediment, nutrients, pesticides, and other pollutants in the buffer rather than in the stream; and reducing erosion by providing stream bank stabilization. The trees provide shade for streams; keeping waters cooler and reducing evaporation.

B. Except as required by PA Code Title 25 Chapter 102, the Riparian Buffer Easement shall be required for all streams (as defined in Article II) with a contributing watershed area of greater than 10 acres. The Riparian Buffer Easement shall be measured to be a minimum of 35 feet from the top of the streambank (on each side).

C. Minimum Management Requirements for Riparian Buffers.

1) No use or construction within the Riparian Buffer shall be permitted that is inconsistent with the intent of the Riparian Buffer as described in Section 305.A.

2) Existing native vegetation shall be protected and maintained within the Riparian Buffer Easement.

3) Whenever practicable, invasive vegetation shall be actively removed and the Riparian Buffer Easement shall be planted with native trees, shrubs and other vegetation to create a diverse native plant community appropriate to the intended ecological context of the site.

D. The Riparian Buffer Easement shall be enforceable by the Municipality and shall be recorded in the appropriate County Recorder of Deeds Office, so that it shall run with the land and shall limit the use of the property located therein. The easement shall allow for the continued private ownership and shall count toward the minimum lot area required by Zoning, unless otherwise specified in the municipal Zoning Ordinance.

E. Any permitted use within the Riparian Buffer Easement shall be conducted in a manner that will maintain the extent of the existing 100-year floodplain, improve or maintain the stream stability, and preserve and protect the ecological function of the floodplain.

F. Stormwater drainage pipes shall be permitted within the Riparian Buffer Easement, but they shall cross the Easement in the shortest practical distance. Other structural stormwater management facilities are not permitted within the Riparian Buffer Easement.

G. The following conditions shall apply when public and/or private recreation trails are permitted by the Municipality within Riparian Buffers:

   1) It is preferred that trails be designed to be permeable and for non-motorized use only; however, impermeable trails are permitted provided they have adequate drainage.

   2) Trails shall be designed to have the least impact on native plant species and other sensitive environmental features.

H. Septic drainfields and sewage disposal systems shall not be permitted within the Riparian Buffer Easement and shall comply with setback requirements established under 25 Pa. Code Chapter 73.

I. Underground utilities shall be permitted within the Riparian Buffer Easement; however, work shall be performed to minimize disturbance area and removal of trees. Restoration within the Riparian Buffer Easement shall be with native species of trees, grasses, and other plantings. One tree shall be planted for each tree removed and the restoration shall be designed by a Registered Professional with the requisite experience. Aboveground utilities shall only be permitted to cross the Easement perpendicular to the Easement or in the shortest practical distance. Existing utilities may remain and be maintained as required.

Section 307: Easements

A. Easements shall be established to accommodate the existence of drainageways.

B. Where a development site is traversed by a watercourse, drainageway, channel or stream, there shall be provided an easement paralleling the line of such watercourse, drainageway, channel or stream with a width adequate to preserve the unimpeded flow.

C. Easements shall be established for all on-site stormwater management or drainage facilities, including but not limited to detention facilities (above or below ground), infiltration facilities, all stormwater BMPs, drainage swales, and drainage facilities (inlets, manholes, pipes, etc.).

D. Easements are required for all areas used for off-site stormwater control.

E. All easements shall be a minimum of 20 feet wide and, to the extent practicable, shall encompass the one-hundred-year surface elevation of the proposed stormwater facility.

F. Easements shall provide ingress to, and egress from, a public right-of-way. In lieu of providing an easement to the public right-of-way, a note may be added to the plan granting the Borough or its designees access to all easements via the nearest public right-of-way able for vehicle ingress and egress on grades of less than 10% for carrying out inspection or maintenance activities.

G. Where possible, easements shall be centered on side and/or rear lot lines.

H. Nothing shall be planted or placed within the easement which would adversely affect the function of the easement or conflict with any conditions associated with such easement.

I. All easement agreements shall be recorded with a reference to the recorded easement indicated on the SWM site plan. The format and content of the easement agreement shall be reviewed and approved by the Municipal Engineer and Solicitor.

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Article IV – Stormwater Management (SWM) Site Plan and Report Requirements

Section 401: Plan and Report Requirements

A. For all Regulated Activities not eligible for exemptions pursuant to this Ordinance, the Applicant shall submit a Stormwater Management (SWM) Site Plan and report prepared and sealed by a Professional Engineer or Landscape Architect licensed in the Commonwealth of Pennsylvania.

B. Appropriate sections from the Bellevue Borough Subdivision and Land Development Ordinance, and other applicable ordinances, shall be followed in preparing the SWM Site Plans. These include, but are not limited to the requirements relating to mapping and Plan preparation and submittal.

C. The 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, the Borough may either disapprove the submission and require a resubmission, or in the case of minor deficiencies, the Borough may accept submission of modifications.

D. Provisions for permanent access or maintenance easements must be made 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. All such easements and access points shall be clearly delineated in the SWM Site Plan.

E. The following signature block shall be included in the SWM Site Plan:

> "I _____(name of the Designated Plan Reviewer), on this date _____(date of signature), have reviewed the SWM Site Plan per the Municipal SWM Ordinance (Ord. No. 2018-07). The SWM Plan appears to be consistent with all Municipal requirements except where waivers have been noted on the Plan. The review is based on the SWM Plan and Report as prepared by others and assumes that all information is correct and valid as submitted."

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

1) The overall stormwater management concept for the project.

   a) A grading plan, indicating all areas of earth disturbance for the proposed activity.

   b) A listing of all permits and other authorizations that will be required for the project, including the status of permit applications and approvals.

2) A determination of site conditions in accordance with the BMP Manual. A detailed site evaluation shall be completed for projects proposed in areas of carbonate geology or karst topography, and other environmentally sensitive areas, such as brownfields.

a) Hydrologic (watershed) and water feature boundaries, including all areas flowing to the proposed project, existing streams, springs, lakes, ponds, or other bodies of water within the project area.

b) Existing and proposed topographical information with contours and elevations.

c) Locations of existing standing water, seepage, wetlands, and hydrologically sensitive areas.

d) 100-year flood elevations for any floodplains on or within 100 feet of the property.

e) Existing and proposed ground cover and land use. The total area of and percent impervious cover shall be noted.

f) Wetlands delineation report, if required.

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 calculation methodology and general requirements in Article III of this Ordinance.

a) Complete delineation of the flow paths used for calculating the time of concentration for the pre-developed and post-developed conditions.

b) The design professional's selection of a specific runoff calculation method shall be based on the suitability of the method for the given project site conditions with due consideration to the limitations of the method chosen. The Municipal Engineer reserves the right to stipulate the runoff calculation method for any project site.

4) A Plan of the proposed stormwater drainage system, stormwater management practices to be applied both during and after construction, and the expected project time schedule.

5) A soil erosion and sediment control plan, where applicable, as prepared for and submitted to the Allegheny County Conservation District.

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.

a) For any sites with existing stormwater management facilities or BMPs, the nature and condition of such facilities must be discussed in the SWM Site Plan Narrative. If the existing facilities are proposed to remain intact and function as all or part of the facilities required for the project, the following information must be included in the SWM Site Plan:

(i) Inspections and/or certifications that the existing facilities are sized and capable of operating as required, including:

(a) Surveys of all pertinent elevations associated with the facility, including but not limited to inverts or channel bottoms, outlet controls, embankments, and receiving streams or structures;

(b) ii. Internal conditions of all underground pipes and structures, including the use of photographs or video for documentation;

(c) iii. Design calculations from the facilities' original construction, if available;

(d) iv. Operation and maintenance records, if available.

(ii) Plans and descriptions of any alterations proposed for the facilities.

(iii) Runoff and design calculations.

b) If proposing infiltration BMPs, the Applicant shall consider the following:

(i) Permeability and infiltration rate of the site soils.

(ii) Slope and depth to bedrock.

(iii) Seasonal high water table.

(iv) Proximity to building foundations and well heads.

(v) Erodibility of soils.

(vi) Land availability and topography.

(vii) Slope stability.

(viii) Effects on nearby properties and structures.

c) A detailed soils evaluation of the project site must be performed to determine the suitability of infiltration BMPs. The evaluation shall be performed by a qualified professional.

8) The 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) A justification, acceptable to the Designated Plan Reviewer, must be included in the SWM Site Plan if BMPs other than green infrastructure methods and LID practices are proposed to achieve the volume, rate and water quality controls under this Ordinance.

G. The SWM site report shall include, but not be limited to:

1) General data, including:

   a) Project name.

   b) Project location, address of the property site.

   c) Name, address, and telephone number of the applicant/owner of the property.

   d) Name, address, telephone number, e-mail address, and engineering seal of the individual preparing the SWM site report.

   e) Date of submission and revisions.

2) Project description narrative that clearly discusses the project and provides the following information, where applicable.

   a) Narrative statement of the regulated activity describing what is being proposed. Overall stormwater management concept with description of permanent stormwater management techniques, including construction specifications and materials to be used for stormwater management facilities.

   b) Expected project schedule.

   c) Location map showing the project site and its location relative to release rate districts.

   d) Detailed description of the existing site conditions, including a site evaluation completed for projects proposed in areas of carbonate geology or karst topography, and other environmentally sensitive areas such as brownfields.

   e) Total site area, pre and post, which must be equal or have an explanation as to why it is not.

   f) Total site impervious area.

   g) Total off-site areas.

   h) Number and description of stormwater management facilities.

   i) Type of development.

   j) Predevelopment land use.

   k) Whether site is a water quality sensitive (WQS) development.

   l) Whether site is in a defined sensitive area.

   m) Types of water quality and recharge systems used, if applicable.

   n) Complete hydrologic, hydraulic, and structural computations for all stormwater management facilities.

o) A written maintenance plan for all stormwater features, including detention facilities and other stormwater management elements.

p) Identification of ownership and maintenance responsibility for all permanent stormwater management facilities.

q) Other pertinent information, as required.

3) Summary tables:

a) Predevelopment hydrologic soil group (HSG) assumptions, curve numbers (CN), computation of average slope, hydraulic length, computed time of concentration.

b) Existing conditions runoff volume and peak rate of runoff.

c) Post-development runoff volume and peak rate of runoff.

d) Undetained areas, areas to ponds.

e) Land use for each subarea.

f) Hydrologic soil group (HSG) assumptions, curve numbers (CN).

g) Time of concentration computed for each subarea.

h) Post-development peak rate of runoff routed to ponds and out.

i) Pond maximum return period design data, including maximum water surface elevation, berm elevation, and emergency spillway elevation.

j) Water quality depth and volume requirements.

4) Calculations:

a) Complete hydrologic, hydraulic and structural computations, calculations, assumptions, and criteria for the design of all stormwater BMPs.

b) Details of the berm embankment and outlet structure indicating the embankment top elevation, embankment side slopes, top width of embankment, emergency spillway elevation, perforated riser dimensions, pipe barrel dimensions and dimensions and spacing of anti-steep collars.

c) Design computations for the control structures (pipe barrel and riser, etc.).

d) A plot or table of the stage-storage (volume vs. elevation) and all supporting computations.

e) Routing computations.

5) Drawings:

a) Drainage area maps for all watersheds and inlets depicting the time of concentration path for both existing conditions and post-developed condition.

b) All stormwater management facilities must be located on a plan and described in detail, including easements and buffer boundaries.

c) Reports that do not clearly indicate the above information may be rejected for review by the Borough and will be returned to the applicant.

d) Description of, justification, and actual field results for infiltration testing with respect to the type of test and test location for the design of infiltration BMPs.

e) 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 municipal stormwater collection system that may receive runoff from the project site.

f) Description of the proposed changes to the land surface and vegetative cover, including the type and amount of impervious area to be added.

g) Identification of short-term and long-term ownership, operation, and maintenance responsibilities, as well as schedules and costs for inspection and maintenance activities for each permanent stormwater or drainage BMP, including provisions for permanent access or maintenance easements.

Section 402: Plan Submission

A. The Applicant shall submit twelve (6) copies of the SWM Site Plan as follows:

1) Three (3) copies to the Borough of Bellevue.

2) One (1) copy to the Bellevue Borough Municipal Engineer.

3) One (1) copy to the Allegheny County Conservation District (when requested by the District).

4) One (1) copy to the Allegheny County Sanitary Authority (in areas with combined sewer systems).

B. Additional copies shall be submitted as requested by the Borough or DEP.

Section 403: Plan Review

A. The Municipality has designated the Bellevue Borough Municipal Engineer as the Designated Plan Reviewer of SWM Site Plans and Reports for the Municipality, and shall be understood to be the reviewer where indicated as the Municipality within this ordinance.

B. SWM Site Plans shall be reviewed by the Borough for consistency with the provisions of this Ordinance.

C. The Borough 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 Subdivision and Land Development Plan, the notification shall occur within the time period allowed by the Municipalities Planning Code (90 days). If a longer notification period is provided by other statute, regulation, or ordinance, the Applicant will be so notified by the Borough.

D. For any SWM Site Plan that proposes to use any BMPs other than green infrastructure and LID practices to achieve the volume and rate controls required under this Ordinance, the Municipality will not approve the SWM Site Plan unless it determines that green infrastructure and LID practices are not practicable.

E. If the Borough disapproves the SWM Site Plan, the Borough will state the reasons for the disapproval in writing. The Borough also may approve the SWM Site Plan with conditions and, if so, shall provide the acceptable conditions for approval in writing.

Section 404: Modification of Plans

A. A modification to a 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 the Borough shall require a resubmission of the modified SWM Site Plan in accordance with this Article.

Section 405: Resubmission of Disapproved SWM Site Plans

A. A disapproved SWM Site Plan may be resubmitted, with the revisions addressing the Borough's concerns, to the 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

A. The 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. The 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 the 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 the Borough may consider the SWM Site Plan disapproved and may revoke any and all permits. SWM Site Plans that are considered disapproved by the Borough shall be resubmitted in accordance with Section 405 of this Ordinance.

Section 407: Record Drawings, Completion Certificate, and Final Inspection

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

B. The record drawings submission shall include a certification of completion signed by a Professional Engineer licensed in the Commonwealth of Pennsylvania verifying that all permanent SWM BMPs have been constructed according to the approved plans and specifications. The latitude and longitude coordinates for all permanent SWM BMPs must also be submitted, at the central location of the BMPs. If any licensed qualified professionals contributed to the construction plans, then a licensed qualified professional must sign the completion certificate.

C. The Municipality may conduct inspections during construction as it deems appropriate. If inspections performed by the Municipality reveal deficiencies from the submitted and approved SWM Site Plan, the Municipality may request corrective actions. Any corrective action shall be at the cost of the stormwater facility owner.

D. After receipt of the completion certification by the Borough, the Borough may conduct a final inspection.

Section 408: Technical and Design Standards

A. The following paragraphs identify technical and design standards that must be utilized in all SWM Site Plans submitted to the Borough.

B. General Design Standards Conveyance Facility Design Standards

1) No outlet structure from a stormwater management facility, or swale, shall discharge directly onto a Municipal or State roadway without approval from the Municipality or PennDOT.

2) The top, or toe, of any slope shall be located a minimum of 10 feet from any property line.

3) The minimum horizontal distance between any stormwater holding facility shall be 25 feet. The lowest floor elevation of any structure constructed immediately adjacent to a detention basin or other stormwater facility shall be a minimum of 2 feet above the 100-year water surface elevation.

4) Stormwater management facility bottom (or surface of permanent pool) elevations must be greater than adjacent floodplain elevations (FEMA or HEC-RAS analysis). If no floodplain is defined, bottom elevations must be greater than existing ground elevations 50 feet from top of stream bank in the facilities' vicinity.

5) Energy dissipators and/or level spreaders shall be installed at points where pipes or drainageways discharge to or from basins. Discharges to drainage swales shall be dissipated, or piped, to an acceptable point.

6) Landscaping and planting specifications must be provided for all stormwater management basins and be specific for each type of basin.

7) Stormwater roof drains and pipes shall not discharge onto impervious areas without approval by the Municipal Engineer.

C. Conveyance Facility Design Standards

1) Where practicable, storm sewers shall be designed to traverse under seeded and planted areas. If constructed within ten (10) feet of roads, sidewalks, or other paved surfaces, storm sewers shall be installed within the narrowest trench possible and backfilled with select material to prevent surface settlement.

2) Storm sewers shall be designed with a concrete cradle when traversing fill areas of questionable stability.

3) Storm sewers shall be designed with pipe anchors when the pipe slope exceeds twenty (20) percent.

4) The minimum storm sewer size shall be fifteen (15) inches in diameter. Pipes shall be designed to provide a minimum velocity of 2-1/2 feet per second when flowing full, but in all cases, the slope shall be no less than 0.5%. Arch pipe of equivalent cross-sectional area may be substituted in lieu of circular pipe where cover or utility conflict conditions exist.

   a) All storm sewer pipes shall be laid to a minimum depth of 1 foot from subgrade to the crown of pipe.

5) Pipe material, trenching, bedding, and backfilling requirements shall conform to the requirements of the Municipal Engineer and/or applicable PennDOT Standards, latest version.

6) Storm sewers shall be either reinforced concrete or high density polyethylene (HDPE) pipe, subject to cover requirements and the approval of the Municipal Engineer.

7) Collection/conveyance facilities should not be installed parallel or close to the top or bottom of an embankment to avoid the possibility of failure of the facility or the embankment.

8) All collection/conveyance facilities shall be designed to convey the twenty-five (25) year frequency storm peak flow rate and carry it to the nearest suitable outlet. The conveyance capacities of any downstream facilities to which this flow is tributary must be verified.

9) All developments shall include provisions that allow for the overland conveyance and flow of the post-development 100-year storm event without damage to public or private property.

10) Stormwater conveyance including a cut-off trench/berm, storm sewer pipes, inlets, and stormwater easement, shall be provided along the toe of all cut and fill slopes that are adjacent to residential lots.

11) Inlets:

a) In curbed roadway sections, the maximum encroachment of water on the roadway pavement shall not exceed half of a through travel lane or one inch less than the depth of curb during the ten-year design storm of five-minute duration. In curbed sections of super-elevated roadways, the maximum encroachment of water on the roadway shall not exceed one inch less than the depth of curb during the ten-year design storm of five-minute duration. Gutter depth shall be verified by inlet capture/capacity calculations that account for road slope and opening area.

b) Inlets shall be placed at a maximum of 400 feet apart.

c) Inlets shall be placed so drainage cannot cross intersections or street centerlines.

d) For inlets containing a change in pipe size, the elevation for the crown of the pipes shall be the same or the smaller pipe's crown shall be at a higher elevation.

e) All inlets shall provide a minimum 2 inch drop between the lowest inlet pipe invert elevation and the outlet pipe invert elevation.

f) On curbed sections, a double inlet shall be placed at the low point of sag vertical curves, or an inlet shall be placed on each side of the low point at a distance not to exceed 100 feet, or at an elevation not to exceed 0.2 feet above the low point.

g) At all roadway low points, swales and easements shall be provided behind the curb or swale and through adjacent properties to channelize and direct any overflow of stormwater runoff away from dwellings and structures.

h) All inlets in paved areas shall have heavy duty bicycle safe grating. A note to this effect shall be added to the SWM Site Plan or inlet details therein.

i) Inlets must be sized to accept the specified pipe sizes without knocking out any of the inlet corners. All pipes entering or exiting inlets shall be cut flush with the inside wall of the inlet. A note to this effect shall be added to the SWM Site Plan or inlet details therein.

j) Inlets shall have weep holes covered with geotextile fabric placed at appropriate elevations to completely drain the sub grade prior to placing the base and surface course on roadways.

k) Inlets, junction boxes, or manholes greater than five (5) feet in depth shall be equipped with ladder rungs and shall be detailed on the SWM Site Plan.

l) Inlets shall not have a sump condition in the bottom (unless designed as a water quality BMP or specifically approved by the Municipality). Pipe shall be flush with the bottom of the box or concrete channels shall be poured.

m) Accessible drainage structures shall be located on continuous storm sewer system at all vertical dislocations, at all locations where a transition in storm sewer pipe sizing is required, at all vertical and horizontal angle points exceeding 5 degrees, and at all points of convergence of 2 or more storm sewer pipes.

n) All storm drainage piping shall be provided with either reinforced concrete headwalls or end sections of compatible material as the pipe involved at its entrance and

discharge.

o) Outlet protection and energy dissipaters shall be provided at all surface discharge points in order to minimize erosion consistent with the E&S Manual.

p) Flow velocities and volumes from any storm sewer shall not result in a degradation of the receiving channel.

D. Stormwater Management Facility Design Standards

1) If proposing underground detention facilities, the design must incorporate appropriate access features and means to inspect, maintain, and ensure the proper operation of the facilities and their ability to control discharge rates to the levels mandated in the SWM Site Plan.

2) The design of BMPs incorporating embankments must be completed and sealed by a Professional Engineer with relevant experience licensed in the Commonwealth of Pennsylvania.

3) Detention facilities and impoundments must provide a total storage volume allowance equal to 110% of the maximum required 100-year storm storage volume to allow for the accumulation of sediment. Appropriate means of access and the ability to maintain the BMP shall be incorporated into the design.

4) Principal Outlet Structures:

a) The primary outlet structure shall be designed to pass all design storms (up to and including the 100-year event) without discharging through the emergency spillway. All principal outlet structures shall:

b) Be constructed of reinforced concrete or an alternative material approved by the Municipal Engineer. When approved for use, all metal risers shall:

c) Be suitably coated to prevent corrosion.

d) Have a concrete base attached with a watertight connection. The base shall be sufficient weight to prevent flotation of the riser.

e) Provide a trash rack or similar appurtenance to prevent debris from entering the riser.

f) Provide an anti-vortex device, consisting of a thin vertical plate normal to the basin berm.

g) Provide trash racks to prevent clogging of primary outflow structure stages for all orifices.

h) Provide outlet aprons and shall extend to the toe of the basin slope at a minimum.

5) Emergency Spillways

a) The top of embankment elevation shall provide a minimum 1 foot of freeboard above

the maximum water surface elevation. This is to be calculated when the spillway functions for the 100-year post-development inflow, with a blocked outlet structure.

b) Avoid locating on fill areas, whenever possible.

c) The spillway shall be armored to prevent erosion during the 100-year post-development flow, with a blocked primary outlet structure.

d) Synthetic liners or riprap may be used, and calculations sufficient to support proposed armor must be provided. An earthen plug must be used to accurately control the spillway invert if riprap is the proposed armoring material.

e) Spillway armor must extend up the sides of the spillway, and continue full width to a minimum of 10 feet past the toe of the slope.

f) The Municipal Engineer may require the use of additional protection when slopes exceed 4:1 and spillway velocities might exceed NRCS standards for the particular soils involved.

g) Detention facilities must include an emergency "spillway" or outlet configuration sized and located to permit the safe passage of stormwater flows from the unattenuated 100-year postdevelopment storm with one (1) foot of freeboard, and assuming that all other facility outlets are clogged or otherwise out of service.

6) The Borough may require that all ground surface, open detention facilities, BMPs. or other facilities where water depths could exceed twenty-four (24) inches to install fencing as approved by the Borough Engineer.

7) Basin outflow culverts discharging into floodplains must account for tailwater. Tailwater corresponding to the 100-year floodplain elevation must be used for all design storms, or the Applicant may elect to determine flood elevations of the adjacent watercourse for each design storm. The floodplain is assumed to be 50 feet from top of stream bank in areas where a floodway is not designated, or no other evidence is provided.

8) The invert of all stormwater management facilities and underground infiltration/storage facilities shall be located a minimum of 2 feet above the seasonal high groundwater table. The invert of stormwater facilities may be lowered if adequate sub-surface drainage is provided. Flows from underdrains need not be accounted for in Volume or Rate Control calculations.

9) Whenever possible the side slopes and basin shape shall be amenable to the natural topography. Vertical side slopes and rectangular basins shall be avoided whenever possible.

10) Exterior slopes of compacted soil shall not exceed 3:1, and may be further reduced if the soil has unstable characteristics.

11) Interior slopes of the basin shall not exceed 3:1.

12) Unless specifically designed as a volume control facility, all stormwater management facilities shall have a minimum slope of 2% extending radially out from the principal outlet

structure. Facilities designed as water quality / infiltration BMPs may have a bottom slope of zero.

13) Impervious low-flow channels are not permitted within stormwater management facilities.

14) Unless specifically designed as a Volume Control or water quality facility, all stormwater management facilities must empty over a period of time not less than 24 hours and not more than 72 hours from the end of the facility's inflow hydrograph. Infiltration tests performed at the facility locations and proposed basin bottom depths, in accordance with the BMP Manual, must support time-to-empty calculations if infiltration is a factor.

15) Water quality inlets shall be utilized in parking areas and/or loading areas that discharge to stormwater management systems. At least one water quality inlet shall be installed on any project proposing storm inlets, with no less than one (1) installed for each acre of drainage area. The purpose of such inlets is to remove oil, grease, heavy particulates, total suspended solids, hydrocarbons, and other floating substances from stormwater runoff. Methods other than water quality inlets may be permitted if the Applicant demonstrates to the Borough's satisfaction that any such alternative will be as effective and as easily maintained. Periodic cleaning of these systems shall be addressed in the Operation and Maintenance Plan for the facility.

Article V – Operation and Maintenance

Section 501: Responsibilities of Developers and Landowners

A. The Borough shall make the final determination on the continuing maintenance responsibilities prior to final approval of the SWM Site Plan. The 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 the Borough will accept the facilities. The Borough reserves the right to accept or reject the ownership and operating responsibility for any portion of the stormwater management controls.

B. 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.

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

D. The Borough may take enforcement actions against an owner for any failure to satisfy the provisions of this Article.

Section 502: Operation and Maintenance Agreements

A. Prior to final approval of the SWM Site Plan, the property owner shall sign and record an Operation and Maintenance (O&M) Agreement (see Appendix A) covering all stormwater control facilities which are to be privately owned.

   1) The owner, successor and assigns shall maintain all facilities in accordance with the approved maintenance schedule in the O&M Plan.

   2) The owner shall convey to the Borough conservation easements to assure access for periodic inspections by the Borough and maintenance, as necessary.

   3) The owner shall keep on file with the Borough the name, address, and telephone number of the person or company responsible for maintenance activities; in the event of a change, new information shall be submitted by the owner to the Borough within ten (10) working days of the change.

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

Section 503: Performance Guarantee

A. For SWM Site Plans that involve subdivision and land development, the Applicant shall provide a financial guarantee to the Borough for the timely installation and proper construction of all stormwater management controls as required by the approved SWM Site Plan and this

Ordinance in accordance with the provisions of Sections 509, 510, and 511 of the Pennsylvania Municipalities Planning Code.

Article VI – Fee and Expenses

Section 601: General

A. Fees may be established from time to time by the Borough in accordance with applicable laws to defray Plan review and construction inspection costs incurred by the Borough. All fees shall be paid by the Applicant at the time of submission of the SWM Site Plan.

B. Any fees established pursuant to this Ordinance may include, but not necessarily be limited to, any of the following:

1) Administrative Costs.

2) Review of the SWM Site Plan by the Borough and the Municipal Engineer.

3) Site inspections.

4) Inspection of stormwater management facilities and stormwater management improvements during construction.

5) Final inspections.

6) Any additional work required to enforce provisions of this Ordinance, correct violations, and assure proper completion of stipulated remedial actions.

C. Should the Borough's actual costs exceed the fees submitted by the Applicant, the Borough may invoice the Applicant for the difference. Such payment will be submitted by the Applicant to the Borough within 30 days of invoice receipt.

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Article VII – 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 Borough's storm drainage system or the Waters of this Commonwealth is prohibited.

B. No person shall allow, or cause to allow, discharges into the Borough's storm drainage system, or discharges into 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 of pollution to the Borough's storm drainage system or to the Waters of this Commonwealth:

1) Discharges or flows from firefighting activities.

2) Discharges from potable water sources including water line flushing and fire hydrant flushing, if such discharges do not contain detectable concentrations of Total Residual Chlorine (TRC).

3) Non-contaminated irrigation water, water from lawn maintenance, landscape drainage and flows from riparian habitats and wetlands.

4) Diverted stream flows and springs.

5) Non-contaminated pumped ground water and water from foundation and footing drains and crawl space pumps.

6) Non-contaminated HVAC condensation and water from geothermal systems.

7) Residential (i.e., not commercial) vehicle wash water where cleaning agents are not utilized.

8) Non-contaminated hydrostatic test water discharges, if such discharges do not contain detectable concentrations of TRC.

9) Dechlorinated swimming pool and hot tub discharges, as long as the PADEP guidelines for swimming pool water discharge are followed.

D. In the event that the Borough or DEP determines that any of the discharges identified in Subsection C significantly contribute pollutants to the Borough's storm drainage system or to the Waters of this Commonwealth, the Borough or DEP will notify the responsible person(s) to cease the discharge.

Section 702: Roof Drains and Sump Pumps

A. Roof drains and sump pumps shall discharge to infiltration or vegetative BMPs.

Section 703: Alteration of SWM BMPs

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

Article VIII – Enforcement and Penalties

Section 801: Right-of-Entry

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

Section 802: Inspection

A. SWM BMPs shall be inspected by the landowner, or the owner's designee (including the Borough for dedicated and owned facilities), according to the following list of minimum frequencies:

   1) Annually for the first 5 years.

   2) Once every 3 years thereafter.

   3) During or immediately after the cessation of a 10-year or greater storm.

   Inspections should be conducted during or immediately following precipitation events. A written inspection report shall be created to document each inspection. The inspection report shall contain the date and time of the inspection, the individual(s) who completed the inspection, the location of the BMP, facility or structure inspected, observations on performance, and recommendations for improving performance, if applicable. Inspection reports shall be submitted to the Municipality within 30 days following completion of the inspection.

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, unless specifically exempted in Section 302.

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 the Borough. Written documentation of all inspections, including any necessary corrective actions, will be submitted to the Borough within ten (10) days of the inspection.

Section 804: Suspension and Revocation

A. Any approval or permit issued by the 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 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 the Borough when:

1) The Borough has inspected and approved the corrections to the violations that caused the suspension.

2) The Borough is satisfied that the violation has been corrected.

C. An approval that has been revoked by the 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, the Borough may provide a limited time period for the owner to correct the violation. In these cases, the 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, the 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 $ 1,000.00 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, the Borough, through its Solicitor, 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 the Borough or its designee, relevant to the provisions of this Ordinance, may appeal to the Borough within 30 days of that action.

B. Any person aggrieved by any decision of the Borough, 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 the Borough's decision.

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RESOLVED AND ADOPTED by the Council of the Borough of Bellevue at a duly assembled meeting held this 22nd day of January, 2019.

ATTEST:

Ronald Borczyk, Director of
Administrative Services

BOROUGH OF BELLEVUE

Tom Fodi, President

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Appendix A - Reserved

NEW AND EXISTING RELEASE RATE MANAGEMENT DISTRICTS

(There are no designated release rate maps for this municipality at this time.)

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Appendix B

OPERATION AND MAINTENANCE (O&M) AGREEMENT
STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES (SWM BMPs)

THIS AGREEMENT, made and entered into this _____ day of _____, 2018,by and between _____ , (hereinafter the "Landowner"), and Allegheny County, Pennsylvania, (hereinafter "Municipality");

WITNESSETH

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

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

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

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

WHEREAS, the Municipality requires, through the implementation of the SWM Site Plan, that SWM BMPs as required by said SWM Site Plan and the Municipal 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 SWM Site Plan.

2. The Landowner shall operate and maintain the BMPs as shown on the SWM Plan in good working order in accordance with the specific operation and maintenance requirements noted on the approved O&M Plan.

3. The Landowner hereby grants permission to the Municipality, 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. Whenever possible, the Municipality shall notify the Landowner prior to entering the property.

4. In the event the Landowner fails to operate and maintain the BMPs per paragraph 2, the Municipality or its representatives may enter upon the Property and take whatever action is deemed necessary to maintain said BMP(s). It is expressly understood and agreed that the Municipality is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the Municipality.

5. In the event the Municipality, 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, the Landowner shall reimburse the Municipality for all expenses (direct and indirect) incurred within 10 days of receipt of invoice from the Municipality.

6. The intent and purpose of this Agreement is to ensure the proper maintenance of the onsite BMPs by the Landowner; provided, however, that this Agreement shall not be deemed to create or effect any additional liability of any party for damage alleged to result from or be caused by stormwater runoff.

7. The Landowner, its executors, administrators, assigns, and other successors in interests, shall release the Municipality from all damages, accidents, casualties, occurrences, or claims which might arise or be asserted against said employees and representatives from the construction, presence, existence, or maintenance of the BMP(s) by the Landowner or Municipality.

8. The Municipality may inspect the BMPs at a minimum of once every three years to ensure their continued functioning.

This Agreement shall be recorded at the Office of the Recorder of Deeds of Allegheny County, Pennsylvania, 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)

For the Municipality:

_____

For the Landowner:

_____

ATTEST:

_____ (Borough)
County of Allegheny, Pennsylvania
I, _____, a Notary Public in and for the county and state aforesaid, whose commission
expires on the _____ day of _____, 2018, do hereby certify that _____
whose name(s) is/are signed to the foregoing Agreement bearing date of the _____ day
_____,
2018, has acknowledged the same before me in my said county and state.
GIVEN UNDER MY HAND THIS _____ day of _____, 2018.

_____

NOTARY PUBLIC **(SEAL)**

Appendix C

SMALL PROJECT STORMWATER MANAGEMENT SITE PLAN

This small project stormwater site plan has been developed to assist those proposing Small Projects to meet the requirements of the Bellevue Borough Stormwater Management Ordinance without having to hire professional services to draft a formal stormwater management plan. This small project site plan is only permitted for projects with new or reconfigured impervious surfaces of between 2,000 and 5,000 square feet AND less than one (1) acre of earth disturbance (Section 302.B) and using *The Simplified Method* (CG-2 in the BMP Manual[3]) for Volume Control as described in Section 303.B. Additional information can be found in Chapter 6 of the Pennsylvania Stormwater Best Management Practices Manual

A. What is an applicant required to submit?

All requirements of Section 302.B including a brief description of the proposed stormwater facilities, including types of materials to be used, total square footage of proposed impervious areas, volume calculations, and a simple sketch plan showing the following information:

- Location of proposed structures, driveways, or other paved areas with approximate surface area in square feet.
- Location of any existing or proposed onsite septic system and/or potable water wells showing proximity to infiltration facilities.
- County Conservation District erosion and sediment control "Adequacy" letter as may be required by Municipal, County or State regulations.

B. Determination of Required Volume Control and Sizing Stormwater Facilities

1. By following the simple steps outlined below in the provided example, an applicant can determine the runoff volume that is required to be controlled and how to choose the appropriate stormwater facility to permanently remove the runoff volume from the site. Impervious area calculations must include all areas on the lot proposed to be covered by roof area or pavement which would prevent rain from naturally percolating into the ground, including impervious surfaces such as sidewalks, driveways, parking areas, patios or swimming pools. Sidewalks, driveways or patios that are designed and constructed to allow for infiltration are not included in this calculation.

Site Plan Example: Controlling runoff volume from a proposed project site

Step 1: Determine Total Impervious Surfaces

Impervious Surface			Area (sq. ft.)
Roof (Front)	14 ft. x 48 ft.	=	672 sq. ft.
Roof (Rear)	14 ft. x 48 ft.	=	672 sq. ft.
Garage Roof (Left)	6ft. x 24 ft.	=	144 sq. ft.
Garage Roof (Right)	6 ft. x 24 ft.	=	144 sq. ft.
Driveway	12 ft. x 50 ft.	=	1000 sq. ft.
Walkway	4 ft. x 20 ft.	=	80 sq. ft.

	Total Impervious		3000 sq. ft.

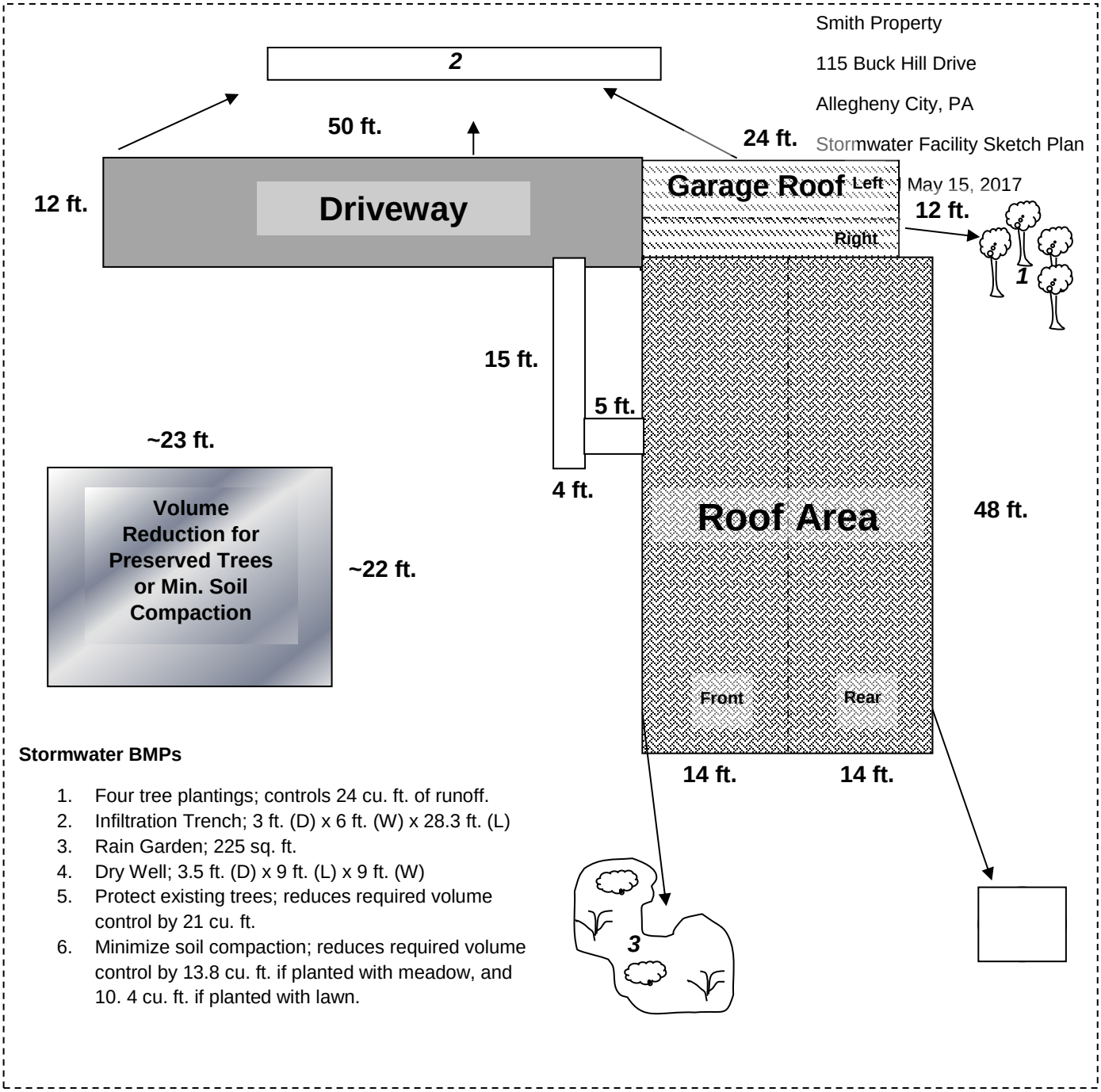

Figure 1: Sample Site Sketch Plan

Step 2: Determine Required Volume Control (cubic feet) using the following equation:

Volume (cu. ft.) = (Total impervious area in square feet x 2 inches of runoff) /12 inches

(3,000 sq. ft. x 2 inches of runoff) /12 inches = 500 cu. ft.

Step 3: Sizing the Selected Volume Control BMP

Several Best Management Practices (BMPs), as described below, are suitable for small stormwater management projects. However, their application depends on the volume required to be controlled, how much land is available, and the site constraints. Proposed development activities can apply both nonstructural and structural BMPs to control the volume of runoff from the site. A number of different volume control BMPs are described below. Note that Figure 1 is an example of how these BMPs can be utilized in conjunction to control the total required volume on one site.

Structural BMPs

A. Infiltration Trench

An Infiltration Trench is a linear stormwater BMP consisting of a continuously perforated pipe at a minimum slope in a stone-filled trench. During small storm events, infiltration trenches can significantly reduce volume and serve in the removal of fine sediments and pollutants. Runoff is stored between the stones and infiltrates through the bottom of the facility and into the soil matrix. Runoff should be pretreated using vegetative buffer strips or swales to limit the amount of coarse sediment entering the trench which can clog and render the trench ineffective. In all cases, an infiltration trench should be designed with a positive overflow.

Design Considerations:

- Although the width and depth can vary, it is recommended that Infiltration Trenches be limited in depth to not more than six (6) feet of stone.
- Trench is wrapped in nonwoven geotextile (top, sides, and bottom).
- Trench needs to be placed on uncompacted soils.
- Slope of the Trench bottom should be level or with a slope no greater than 1%.
- A minimum of 6" of topsoil is placed over trench and vegetated.
- The discharge or overflow from the Infiltration Trench should be properly designed for anticipated flows.
- Cleanouts or inlets should be installed at both ends of the Infiltration Trench and at appropriate intervals to allow access to the perforated pipe.

Volume of facility = Depth x Width x Length x Void Space of the gravel bed (assume 40%).

Maintenance:

- Catch basins and inlets should be inspected and cleaned at least two times a year.
- The vegetation along the surface of the infiltration trench should be maintained in good condition and any bare spots should be re-vegetated as soon as possible.
- Vehicles should not be parked or driven on the trench and care should be taken to avoid soil compaction by lawn mowers.

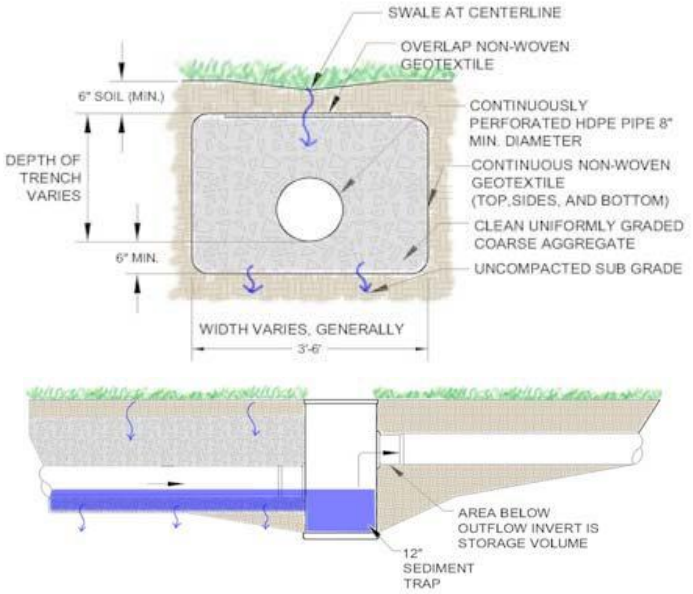

Figure 2: Infiltration Trench Diagram

Source: PA BMP Guidance Manual, Chapter 6, page 42.

Figure 3: Example of Infiltration Trench Installation

Figure 3: Example of Infiltration Trench Installation

Source: PA BMP Guidance Manual, Chapter 6, Page 46.

Sizing Example for Infiltration Trench

1. Determine Total Impervious Surface to drain to Infiltration Trench:

Garage Roof (Left)	6 ft. x 24 ft.	=	144 sq. ft.
Driveway	12 ft. x 50 ft.	=	1000 sq. ft.
Walkway	4 ft. x 20 ft.	=	80 sq. ft.

2. Determine the required infiltration volume:
   (1224 sq. ft. x 2 inches of runoff)/12 ft. = 204 cu. ft. / 0.4* = 510 cu. ft.
   (*0.4 assumes 40% void ratio in gravel bed)

3. Sizing the infiltration trench facility:
   Volume of Facility = Depth x Width x Length

   Set Depth to 3 feet and determine required surface area of trench.

   510 cu. ft. / 3 ft. = 170 sq. ft.

   The width of the trench should be greater than 2 times its depth (2 x D), therefore in this example the trench width of 6 feet selected.

   Determine trench length: L = 170 sq. ft. / 6 ft. = 28.3 ft.

   Final infiltration trench dimensions: 3 ft. (D) x 6 ft. (W) x 28.3 ft. (L)

B. Rain Garden

A Rain Garden is a planted shallow depression designed to catch and filter rainfall runoff. The garden captures rain from a downspout or a paved surface. The water sinks into the ground, aided by deep rooted plants that like both wet and dry conditions. The ideal location for a rain garden is between the source of runoff (roofs and driveways) and the runoff destination (drains, stream, low spots, etc.).

Design Considerations:

- A maximum of 3:1 side slope is recommended.
- The depth of a rain garden can range from 6 - 8 inches. Ponded water should not exceed 6 inches.
- The rain garden should drain within 72 hours.
- The garden should be at least 10-20 feet from a building's foundation and 25 feet from septic system drainfields and wellheads.
- If the site has clay soils, soil should be amended with compost or organic material.
- Choose native plants. See http://pa.audubon.org/habitat/PDFs/RGBrochure_complete.pdf for a native plant list. To find native plant sources go to www.pawildflower.org.
- At the rain garden location, the water table should be at least 2' below the soil level. If water stands in an area for more than one day after a heavy rain you can assume it has a higher water table and is not a good choice for a rain garden.

Maintenance:

- Water plants regularly until they become established.
- Inspect twice a year for sediment buildup, erosion and vegetative conditions.
- Mulch with hardwood when erosion is evident and replenish annually.
- Prune and remove dead vegetation in the spring season.
- Weed as you would any garden.
- Move plants around if some plants would grow better in the drier or wetter parts of the garden.

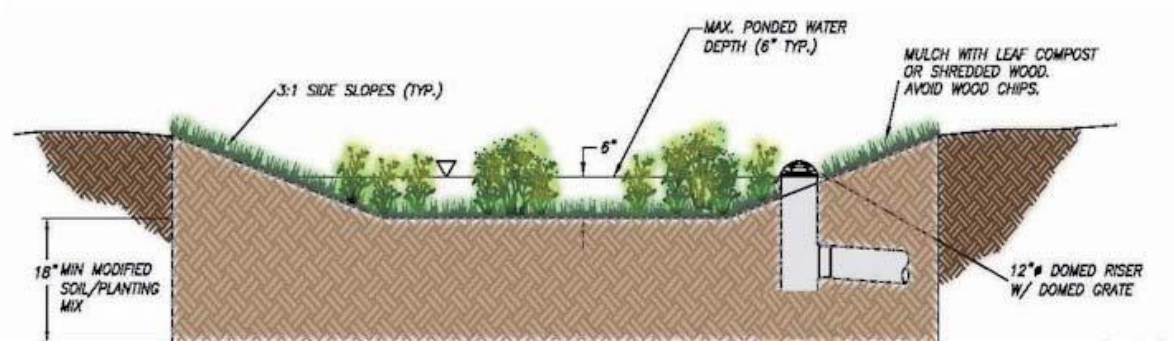

Figure 4: Rain Garden Diagram

Source: PA BMP Guidance Manual, Chapter 6 Page 50

Sizing Example for Rain Garden

1. Pick a site for the rain garden between the source of runoff and a low lying area, a.k.a., a drainage area.

2. Perform an infiltration test to determine the depth of the rain garden:
   - Dig a hole 8″ x 8″
   - Fill with water and put a popsicle stick at the top of the water level.
   - Measure how far it drains down after a few hours (ideally 4 hours).
   - Calculate the depth of water that will drain out over 24 hours.

3. Determine total impervious surface area to drain to rain garden:

Roof (Front)	14 ft. x 48 ft.	=	672 sq. ft.

4. Sizing the rain garden:
   For this example, let's say the infiltration test determined 6″ of water drained out of a hole in 24 hours. The depth of the rain garden should be set to the results of the infiltration test so 6″ is the depth of the rain garden. The sizing calculation below is based on controlling 1″ of runoff. First divide the impervious surface by the depth of the rain garden.

672 sq. ft. / 6 (depth of rain garden in inches) = 112 sq. ft.

In order to control 2″ of runoff volume, the rain garden area is multiplied by 2.

112 sq. ft. * 2 = 224 sq. ft.

The rain garden should be about 225 sq. ft. in size and 6″ deep.

C. Dry Well (a.k.a., Seepage Pit)

A Dry Well, sometimes called a Seepage Pit, is a subsurface storage facility that temporarily stores and infiltrates stormwater runoff from the roofs of structures. By capturing runoff at the source, Dry Wells can dramatically reduce the increased volume of stormwater generated by the roofs of structures. Roof leaders connect directly into the Dry Well, which may be either an excavated pit filled with uniformly graded aggregate wrapped in geotextile, or a prefabricated storage chamber or pipe segment. Dry Wells discharge the stored runoff via infiltration into the surrounding soils. In the event that the Dry Well is overwhelmed in an intense storm event, an overflow mechanism (surcharge pipe, connection to a larger infiltration are, etc.) will ensure that additional runoff is safely conveyed downstream.

Design Considerations:

- Dry Wells typically consist of 18 to 48 inches of clean washed, uniformly graded aggregate with 40% void capacity (AASHTO No. 3, or similar). “Clean” gravel fill should average one and one-half to three (1.5 – 3.0) inches in diameter.
- Dry Wells are not recommended when their installation would create a significant risk for basement seepage or flooding. In general, 10 - 20 feet of separation is recommended between Dry Wells and building foundations.
- The facility may be either a structural prefabricated chamber or an excavated pit filled with aggregate.
- Depth of dry wells in excess of three-and-a-half (3.5) feet should be avoided unless warranted by soil conditions.
- Stormwater dry wells must never be combined with existing, rehabilitated, or new septic system seepage pits. Discharge of sewage to stormwater dry wells is strictly prohibited.
- As shown in Figure 5, the installation should include a surcharge or overflow pipe.

Maintenance:

- Dry wells should be inspected at least four (4) times annually as well as after large storm events.
- Remove sediment, debris/trash, and any other waste material from a dry well.
- Regularly clean out gutters and ensure proper connections to the dry well.
  Replace the filter screen that intercepts the roof runoff as necessary.

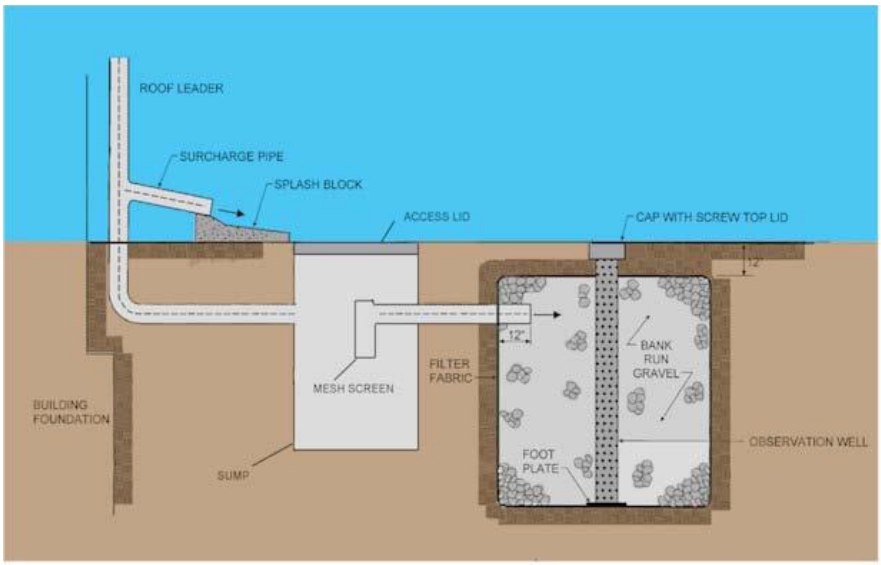

Figure 5: Dry Well Diagram

Source: PA BMP Guidance Manual, Chapter 6, Page 65.

Sizing Example for Dry Wells:

1. Determine contributing impervious surface area:

House Roof (Rear)	14 ft. x 48 ft.	=	672 sq. ft.

2. Determine required volume control:

   (672 sq. ft. x (2 inches of runoff / 12 inches/ft.) = 112 cu. ft.

   112 cu ft. / 0.4 = 280 cu. ft. (assuming the 40% void ratio in the gravel bed)

3. Sizing the dry well:

   Set the depth to 3.5 ft.; Set the width equal to the length for a square chamber.

   3.5 ft. x L x L = 280 cu. ft.; LxL = 280 cu. ft. / 3.5 ft.; thus LxL= 80 sq. ft.; L=9 (approx)

   Dimensions = 3.5 ft. (D) x 9 ft. (L) x 9 ft. (W)

NonStructural BMPs

A. Tree Plantings and Preservation

Trees and forests reduce stormwater runoff by capturing and storing rainfall in the canopy and releasing water into the atmosphere through evapotranspiration. Tree roots and leaf litter also create soil conditions that promote the infiltration of rainwater into the soil. In addition, trees and forests reduce pollutants by taking up nutrients and other pollutants from soils and water through their root systems. A development site can reduce runoff volume by planting new trees or by preserving trees which existed on the site prior to development. The volume reduction calculations either determine the cubic feet to be directed to the area under the tree canopy for infiltration or determine a volume reduction credit which can be used to reduce the size of any one of the planned structural BMPs on the site.

Tree Considerations**:**

- Existing trees must have at least a 4″ trunk caliper or larger.
- Existing tree canopy must be within 100 ft. of impervious surfaces.
- A tree canopy is classified as the continuous cover of branches and foliage formed by a single tree or collectively by the crowns of adjacent trees.
- New tree plantings must be at least 6 ft. in height and have a 2″ trunk caliper.
- All existing and newly planted trees must be native to Pennsylvania. See http://www.dcnr.state.pa.us/forestry/commontr/commontrees.pdf for a guide book titled *Common Trees of Pennsylvania* for a native tree list.
- When using trees as volume control BMPs, runoff from impervious areas should be directed to drain under the tree canopy.

Determining the required number of planted trees to reduce the runoff volume:

1. Determine contributing impervious surface area:

Garage Roof (Right)	6 ft. x 24 ft.	=	144	ft.

2. Calculate the required control volume:
   (144 sq. ft. x 2 inches of runoff) / 12 inches = 24 cu. ft.

3. Determine the number of tree plantings:

   - A newly planted deciduous tree can reduce runoff volume by 6 cu. ft.
   - A newly planted evergreen tree can reduce runoff volume by 10 cu. ft.

   24 cu. ft. / 6 cu. ft. = 4 Deciduous Trees

Determining the volume reduction for preserving existing trees:

1. Calculate approximate area of the existing tree canopy:

   ~22 sq. ft. x ~23 sq. ft. = 500 sq. ft.

2. Measure distance from impervious surface to tree canopy: 35 ft.

3. Calculate the volume reduction credit by preserving existing trees:
    - For Trees within 20 feet of impervious cover:
      Volume Reduction cu. ft. = (Existing Tree Canopy sq. ft. x 1 inch) / 12
    - For Trees beyond 20 feet but not farther than 100 feet from impervious cover:
      Volume Reduction cu. ft. = (Existing Tree Canopy sq. ft. x 0.5 inch) / 12

    (500 sq. ft. x 0.5 inches) / 12 = 21 cu. ft.

    This volume credit can be utilized in reducing the size of any one of the structural BMPs planned on the site. For example, the 21 cu. ft. could be subtracted from the required infiltration volume when sizing the infiltration trench;

    510 cu. ft. – 21 cu. ft. = 489 cu. ft.

    489 cu. ft. / 3 ft. (Depth) = 163 / 6 ft. (Width) = 27.1 ft. (Length)

    Using the existing trees for a volume credit would decrease the length of the infiltration trench to 27.1 ft. instead of 28.3 ft.

B. Minimize Soil Compaction and Replant with Lawn or Meadow

When soil is overly compacted during construction it can cause a drastic reduction in the permeability of the soil and rarely is the soil profile completely restored. Runoff from vegetative areas with highly compacted soils similarly resembles runoff from an impervious surface. Minimizing soil compaction and re-planting with a vegetative cover like meadow or lawn, not only increases the infiltration on the site, but also creates a friendly habitat for a variety of wildlife species.

Design Considerations:

- Area shall not be stripped of topsoil.
- Vehicle movement, storage, or equipment/material lay down shall not be permitted in areas preserved for minimum soil compaction.
- The use of soil amendments and additional topsoil is permitted.
- Meadow should be planted with native grasses. Refer to *Meadows and Prairies: Wildlife-Friendly Alternatives to Lawn* at http://pubs.cas.psu.edu/FreePubs/pdfs/UH128.pdf for reference on how to properly plant the meadow and for a list of native species.

Determining the volume reduction by minimizing soil compaction and planting a meadow:

1. Calculate approximate area of preserved meadow:
   ~22 sq. ft. x ~23 sq. ft. = 500 sq. ft.

2. Calculate the volume reduction credit by minimizing the soil compaction and planting a lawn/meadow:

    - For Meadow Areas: Volume Reduction (cu. ft.) = (Area of Min. Soil Compaction (sq. ft.) x 1/3 inch of runoff) / 12

    (500 sq. ft. x 1/3 inch of runoff) / 12 = 13.8 cu. ft.

- For Lawn Areas: Volume Reduction (cu. ft.) = (Area of Min. Soil Compaction (sq. ft.) x 1/4 inch of runoff) / 12

  (500 sq. ft. x 1/4 inch of runoff) / 12 = 10.4 cu. ft.

This volume credit can be used to reduce the size of any one of the structural BMPs on the site. See explanation under the volume credit for preserving existing trees for details.

Alternative BMP to Capture and Reuse Stormwater

Rain Barrels

Rain barrels are large containers that collect drainage from roof leaders and temporarily store water to be released to lawns, gardens, and other landscaped areas after the rainfall has ended. Rain barrels are typically between 50 and 200 gallons in size. It is not recommended for rain barrels to be used as a volume control BMP because infiltration is not guaranteed after each storm event. For this reason, a rain barrel is not utilized in the site plan example. However, the information is included to provide an alternative for a homeowner to utilize when considering capture and reuse stormwater methods.

Design Considerations:

- Rain barrels should be directly connected to the roof gutter/spout.
- There must be a means to release the water stored between storm events to provide the necessary storage volume for the next storm.
- When calculating rain barrel size, rain barrels are typically assumed to be 25% full because they are not always emptied before the next storm.
- Use screens to filter debris and cover lids to prevent mosquitoes.
- An overflow outlet should be placed a few inches below the top with an overflow pipe to divert flow away from structures.

It is possible to use a number of rain barrels jointly for an area.

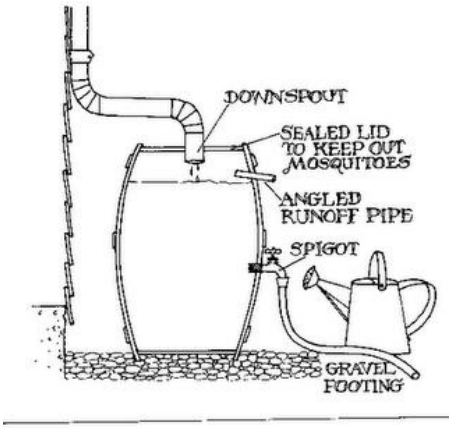

Figure 6: Rain Barrel Diagram and Examples

Sources: (top picture) http://www.citywindsor.ca/DisplayAttach.asp?AttachID=12348
(bottom picture on left) http://repurposinglife.blogspot.com/2009/05/rainwater-harvesting.html
(bottom picture on right) http://www.floridata.com/tracks/transplantedgardener/Rainbarrels.cfm

Sizing Example for a Rain Barrel

1. Determine contributing impervious surface area:

Garage Roof (Right)	6 ft. x 24 ft.	=	144 sq. ft.

2. Determine the amount of rainfall to be captured by the Rain Barrel. A smaller storm, no more than 2″, is recommended to calculate the runoff to be captured. This example chose the 1″ storm event.

3. Calculate the volume to be captured and reused:
   (144 sq. ft. x 1 inch of runoff) / 12 inches = 12 cu. ft.
4. Size the rain barrel:

   1 cu. ft. = 7. 48 gallons

   12 cu. ft. x 7.48 = 90 gallons

90 gallons x (0.25*) = 22.5 gallons (*assuming that the rain barrel is always at least 25% full)

90 gallons + 22.5 gallons = 112 gallons
The rain barrel or barrels should be large enough to hold at least 112 gallons of water.

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Appendix D – References

1. Allegheny County Department of Economic Development. March 20, 2017. Allegheny County Act 167 Phase 2 County-wide Stormwater Management Plan. As adopted on December 6, 2017 and periodically amended and updated.

2. Pennsylvania Department of Environmental Protection. No. 363-0300-002 (December 2006), as amended and updated.

3. *Pennsylvania Stormwater Best Management Practices Manual*. Harrisburg, PA. as amended and updated. *Erosion and Sediment Pollution Control Program Manual.* Harrisburg, PA.

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6. 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/.