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**PART 1**  
**PROHIBITED WASTES**

§101 Definitions.

- 101.1 ALCOSAN: Allegheny County Sanitary Authority including its treatment facility and any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature.
- 101.2 Corrosive waste: A waste or substance which has any of the following properties:
- 101.2.1 It is aqueous and has a pH of less than or equal to 5 or greater than or equal to 10, as determined by pH meter.
- 101.2.2 It is a liquid and corrodes steel (SAE1020) at a rate greater than 6.35 mm (0.250 in.) per year at a test temperature of 55°C (130°F).
- 101.3 Reactive/explosive waste: A waste or substance which can create an explosion hazard in the sewage collection system or the ALCOSAN treatment facility; which has any of but is not limited to the following properties:
- 101.3.1 It is normally unstable and readily undergoes violent change without detonating.
- 101.3.2 It reacts violently with water.
- 101.3.3 It forms potentially explosive mixtures with water.
- 101.3.4 When mixed with water, it generates toxic gasses, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.
- 101.3.5 It is a cyanide or sulfide bearing waste which can generate toxic gasses, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment.
- 101.3.6 It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.
- 101.3.7 It is readily capable of detonation, explosive decomposition or reaction at standard temperature and pressure.
- 101.3.8 It is a forbidden explosive as defined in 40 CFR 173.51, or a Class A explosive as defined in 49 CFR 173.53 or a Class B explosive as defined in 49 CFR 173.88.

- 101.4 Hazardous Waste: All wastes that are defined as hazardous under the regulations enacted pursuant to the Resource Conservation and Recovery Act (RCRA) as specified in 40 CFR 261 or under the regulations promulgated pursuant to the Pennsylvania Solid Waste Management act as specified in 25 PA Code 261.
- 101.5 Ignitable Waste: A waste or substance which can create a fire hazard in the sewage collection system or the ALCOSAN Treatment Facility which has any of but is not limited to the following properties:
- 101.5.1 It is liquid with a flash point less than 60°C (140°F) using the test methods specified in 40 CFR 261.21.
- 101.5.2 It is an oxidizer as defined in 49 CFR 173.151.
- 101.6 Interference: A discharger originating in the Municipality which, alone or in conjunction with a discharge or discharges from other sources, both:
- 101.6.1 Inhibits or disrupts the ALCOSAN facilities, its treatment processes or operations or its sludge processes, use or disposal; and
- 101.6.2 Therefore is a cause of a violation of any requirement of ALCOSAN’s National Pollutant Discharge Elimination System (hereinafter referred to as “NPDES”) Permit (including an increase in the magnitude of sewage sludge use or disposal by ALCOSAN in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent state or local regulations); Section 405 of the Clean Water Act, the Solid Waste Disposal Act (including Title 2 or more commonly referred to as the Resource Conservation and Recovery Act and including state regulations contained in and State Sludge Management Plan prepared pursuant to subtitle D of the Solid Waste Disposal Act), the Clean Air Act, and the Toxic Substances Control Act.
- 101.7 Pass-through: Any discharge of a pollutant through ALCOSAN into the waters of the Commonwealth of Pennsylvania in quantities or concentrations which, alone or in conjunction with other discharges from other sources, is a cause of a violation of any requirement of the ALCOSAN’s NPDES Permit (including an increase in the magnitude or duration of a violation).
- 101.8 Person: Any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust, estate, Governmental Entity, or any other legal entity, or its legal representatives, agents or assigns.

- 101.9 PH: The logarithm (base 10) of the reciprocal of the concentration of hydrogen ions expressed in grams per liter of solution.
- 101.10 Pollutant: Any dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, emissions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discharged equipment, rock, sand, cellar dirt or other industrial, municipal or agricultural waste discharged in water.
- 101.11 Pollution: The man-made or man-induced alteration of the chemical, physical, biological, and/or radiological integrity of water.
- 101.12 The Act: The Federal Water Pollution Control Act also known as The Clean Water Act, as amended, 33 USC 1251 et. seq.
- 101.13 Toxic Pollutant: Any pollutant or combination of pollutants listed as toxic in regulations promulgated by the EPA, pursuant to Section 307(A) of the Act.
- 101.14 Waste water: The liquid and water carried industrial or domestic wastes from dwellings, commercial buildings, industrial facilities, and institutions, together with any ground water, surface water, and storm water that may be present, whether treated or untreated, which is contributed directly or indirectly into the facilities of ALCOSAN.
- 101.15 Waters of the Commonwealth: All *streams*, lakes, ponds, marshes, water courses, water ways, wells, springs, reservoirs, aquifers, irrigation systems, drainage systems, and other bodies or accumulations of water, surface or underground, natural or artificial, public or private, which are contained within, flow through, or border upon the Commonwealth of Pennsylvania or any portion thereof.

§102 Unlawful Discharge into Sewer System.

- 102.1 No person shall introduce or cause to be introduced directly or indirectly into the facilities of ALCOSAN or into any sewer, pipe or other conveyance located in the Municipality and transmitting substances into the facilities of ALCOSAN, any toxic pollutant or other wastewater which will:
  - 102.1.1 Cause interference with the operation or performance of ALCOSAN's treatment plant or other facilities; or
  - 102.1.2 Pass through ALCOSAN's treatment plant or other facilities.
- 102.2 No person shall introduce, permit or cause to be introduced, directly or indirectly, into the facilities of ALCOSAN or into any piped sewer, pipe or other conveyance located in the Municipality and transmitting substances into the facilities of ALCOSAN any of the following:

- 102.2.1 Any substance which will endanger the life, health or safety of the treatment plant sewer maintenance and plant operations personnel or which would preclude safe entry into the sewer system or any portion of the treatment plant.
- 102.2.2 Any ignitable, reactive, explosive, corrosive, or hazardous waste, except as provided for by ALCOSAN's Rules and Regulations.
- 102.2.3 Any wastewater with a temperature greater than 140°F (60°C).
- 102.2.4 Any waste which exceeds the naturally occurring background levels of either Alpha, Beta, or Gamma radiation and/or any wastewater containing any radioactive wastes or isotopes of such half life or concentration not in compliance with applicable State or Federal regulations.
- 102.2.5 Any solids or viscous substance capable of causing obstruction to the flow in sewers or other interference with the proper operations of ALCOSAN's facility or facilities discharging into the ALCOSAN system.
- 102.2.6 Any noxious or malodorous liquids, gasses or solids which either singly or by interaction with other wastes may create a public nuisance or adversely affect public health or safety.
- 102.2.7 Pathological wastes from a hospital or other medical establishment.
- 102.2.8 Garbage, whether ground or not, except properly shredded food waste garbage resulting from the proper use of a garbage grinder or disposal type approved by ALCOSAN and maintained in good operating condition.
- 102.2.9 Sludges or other materials from septic tanks or similar facilities or from sewage or industrial waste treatment plants or from water treatment plants: unless the discharge of such sludges and other materials is specifically approved by ALCOSAN.
- 102.2.10 Any pollutant, including oxygen demanding pollutants, released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the ALCOSAN facilities.
- 102.2.11 Any substance which will cause ALCOSAN's effluent or any other product of the ALCOSAN facilities such as residues, sludges, or scums, to be unsuitable for reclamation processes, including any substance which will cause the ALCOSAN facility

to be in non-compliance with sludge use or disposable criteria, guidelines, or regulations developed under §405 of the Act, any criteria, guidelines, or regulations promulgated pursuant to the Solid Waste Disposal Act, the Clean Air Act, the Toxic Substances Control Act or State Law or regulations applicable to the treatment or disposal of such effluent or such product.

102.2.12 Rain or storm water.

§103 ALCOSAN Regulations Incorporated. No person shall take any action or do or cause to be done anything in violation of any rule or regulation of ALCOSAN.

The Pretreatment Regulations of the Allegheny County Sanitary Authority are incorporated into this chapter by reference as though fully set forth herein.

§104 Liability and Penalties. Any person violating any provision of this chapter shall, upon conviction, be punished by a fine not to exceed the sum of three hundred dollars (\$300) for each offense, recoverable with costs, and in default of payment of the fine and costs, shall be subject to imprisonment in the Allegheny County Jail for a period not exceeding thirty (30) days. Each day a violation is continued shall constitute a separate offense. In addition, any person violating any provision of the ALCOSAN Pretreatment Regulations may be subject to administrative and civil penalties as provided for by the Pretreatment Regulations and administered by ALCOSAN. Such penalties may include, but are not limited to, injunctive relief and penalties of up to twenty-five thousand dollars (\$25,000) per day, per violation as provided for by the Publicly Owned Treatment Works Penalty Law, 35 PS 752.1 et seq. Authority to so enforce the Pretreatment Regulations is granted to ALCOSAN and is in addition to, but not in place of, any other remedy available to the Municipality.

§105 Connection Requirements and Fees.

105.1 Definitions

105.1.1 Accommodated Building or Property: A building or other improved property requiring sanitation facilities pursuant to applicable law and having a municipal sanitary sewer line available for direct connection without traversing the private property of others except through public sewer easements.

105.1.2 Connection Fee: A fee for connection of the Accommodated Building or Property to the Sewer System.

105.1.3 Lateral or Lateral Sewer Lines: Private sanitary sewer lines designed and built to provide direct service connections from an Accommodated Building or Property to the Sewer System.

- 105.1.4     Sewer System: The sanitary sewer system of the Municipality of Mt. Lebanon.
- 105.2     Connection Required: The owner of any Accommodated Building or Property within the Municipality of Mt. Lebanon is hereby required and directed to take all steps necessary, pay established fees and cause to be constructed a Lateral Sewer Line on such property to connect such Accommodated Building or Property to the Sewer System. Where such Sewer System is not presently available, such Lateral Sewer Line shall be constructed within ninety (90) days of Sewer System availability as determined by the Municipal Manager. Such connection shall be constructed pursuant to standards established by municipal ordinance, Allegheny County ordinance or regulation or other applicable law. If any such building does not have interior plumbing facilities, the owner thereof is hereby required and directed, within ninety (90) days of the effective date of this Ordinance, to construct such interior plumbing facilities pursuant to standards established by the Allegheny County Department of Health. No outhouses or other types of outdoor sanitation facilities are permitted.
- 105.3     Notice to Connect: The Municipal Manager shall give written notice to all owners of Accommodated Buildings or Property who have failed to make connection to the Sewer System pursuant to §105.2 hereof. Such notice shall direct the owners of such property to make connection to the Sewer System within forty-five (45) days from the date of the notice. Any person, firm or corporation that shall have received such notice and that shall have failed to make such sewer connection within said forty-five (45) day period shall then be in violation of this Chapter and subject to penalties under this Mt. Lebanon Code. Upon failure to make such connection upon notice as specified above, the Municipality of Mt. Lebanon, in addition to all other penalty and enforcement provisions herein set forth, may, at its option, cause such connection to be made and collect the cost thereof from the property owners by municipal claim or in an action in assumpsit.
- 105.4     Connection Fees.
- 105.4.1     Sewer Connection Fees Shall Be As Follows: Per equivalent dwelling unit (EDU): one hundred dollars (\$100)
- 105.4.2     Each EDU shall be defined as a flow equal to three hundred fifty (350) gallons per day.

**PART 2**  
**PROHIBITION OF ILLEGAL SURFACE STORMWATER CONNECTIONS:**  
**DYE TESTING**

§201     Definitions.

- 201.1     Blocked Drain: A drain, which when Dye Tested, does not discharge to the sanitary sewer, and which also cannot be observed to discharge to the surface or subsurface drainage system.
- 201.2     Dye Test: A plumbing test conducted according to professional plumbing standards in which dye is introduced into the storm water collection system of real property to determine if surface storm water is entering the sanitary sewer system.
- 201.3     Evidence of Compliance: An official written statement issued by the Municipality that it has on file a written certification from a plumber registered and licensed by Allegheny County that there are no Illegal Surface Storm water Connections into the sanitary sewer system such as roof leaders, yard drains or driveway drains, and no Blocked Drains.
- 201.4     Interim Evidence of compliance: A statement from the Municipality issued pursuant to the terms of §205 of this Chapter.
- 201.5     Illegal Surface Storm water Connections: The connection of roof leaders, yard drains, driveway drains or other connections conveying surface storm water into the Sanitary Sewer System.
- 201.6     Person: Any natural person, association, partnership, corporation, syndicate, institution, agency, authority, or other entity recognized by law as the subject of rights and duties.
- 201.7     Sanitary Sewer System: A system of pipes which carries sewage and is maintained and operated by the Municipality.
- 201.8     Improved Property: Real property on which any building, driveway or parking pad, or other surface or subsurface improvement has been constructed, installed or erected.
- 201.9     Sale or Conveyance: The sale, transfer or conveyance of any interest in real property, provided, however, that a refinancing of real property, without a conveyance, is not a Sale or Conveyance under this Ordinance.

§202     Connections. The connection of roof leaders, yard drains, driveway drains or other connections conveying surface storm water from an Improved Property into the Sanitary Sewer System is prohibited.

§203 Sale or Conveyance without Evidence of Compliance. Sale or Conveyance without Evidence of Compliance is Prohibited. After the effective date of this Ordinance, it shall be unlawful for any persons to sell or convey, or to purchase or accept the conveyance of, any Improved Property within the Municipality without seller first delivering to the purchaser Evidence of Compliance or Interim Evidence of Compliance issued by the Municipality.

§204 Procedure for Evidence of Compliance. Any person (hereinafter “*Applicant*”) selling or conveying any Improved Property located within the Municipality shall make application for Evidence of Compliance on a form furnished by the Municipality. The *Applicant* shall then have a plumber who is registered and licensed by Allegheny County perform a Dye Test on the Improved Property to be sold or conveyed. The plumber shall complete the appropriate portions of the form certifying that the Improved Property has been Dye Tested and certifying the results of such Dye Test. If there are no Illegal Surface *Stormwater* Connections or Blocked Drains, the Municipality shall issue Evidence of Compliance. If the Dye Test reveals the existence of an Illegal Surface Storm water connection and/or Blocked Drain, no Evidence of Compliance will be issued until the illegal connections are removed and/or the Blocked Drain cleared. Correction of any deficiencies and certification of such correction shall be completed by a plumber registered and licensed by Allegheny County and the certification conveyed to the Municipality.

204.1 Valid Evidence of Compliance shall expire three (3) years following the date of issuance of the Evidence of Compliance. If any additions to the Improved Property are made within the three (3) year period, certification that the addition has no Illegal Surface *Stormwater* Connections and no Blocked Drains shall be provided by a plumber registered and licensed by Allegheny County to the Municipality.

§205 Interim Evidence of Compliance.

205.1 Interim Evidence of Compliance may be issued at the Municipality’s sole discretion upon application to the Municipality when either:

205.1.1 The *Applicant* demonstrates that Dye Testing cannot be performed because of weather conditions; or

205.1.2 When an Illegal Surface *Stormwater* connection and/or Block Drain is discovered and the necessary remedial activities to correct such connection are so complex and time consuming that they create a practical hardship for the *Applicant*.

205.2 Requirements for *Applicant* to Obtain Interim Evidence of Compliance.

205.2.1 The *Applicant* shall provide the Municipality with security in form of a certified check in the amount of two hundred dollars (\$200)

to guarantee that the Dye Test will be performed. The *Applicant* or a purchaser of the Improved Property will cause the Dye Test to be performed within fourteen (14) days following written notification from the Municipality. The notification will be given at such time as the Municipality determines, in its sole discretion, that weather conditions make the Dye Test possible.

205.2.2 The *Applicant* shall provide the Municipality with a signed, written agreement with the purchaser in a form provided by the Municipality in which the purchaser agrees to conduct the Dye Test and to correct, at the purchaser's sole expense, any violations discovered as a result of the Dye Test. Nothing in this section shall prohibit any purchaser from requiring the *Applicant* to reimburse the purchaser for any costs incurred.

205.2.3 Interim Evidence of Compliance may be issued only when the *Applicant* provides the Municipality with an executed contract between the *Applicant* or the purchaser and a plumber registered and licensed by Allegheny County requiring the plumber to conduct the Dye Test and/or complete the necessary remedial work and granting the Municipality the legal power to enforce the contract, and a license granted by *Applicant* and purchaser for the Municipality to enter upon the Improved Property to complete the work in case of default by the parties, and a certified check in the amount of said contract, posted as security with the Municipality. Any required remedial work must be completed and certified by a plumber registered and licensed by Allegheny County.

205.2.4 The Interim Evidence of Compliance shall expire six (6) months from the date of issuance. The *Applicant* and the purchaser shall be advised of the expiration of the Interim Evidence of Compliance, the security shall be forfeited, and the Municipality may use the security to have the necessary testing and/or remedial work completed and pursue any other remedies or penalties pursuant to this Part 2. The Municipal Manager, in his sole discretion, may extend the Interim Evidence of Compliance for one additional six (6) month period

§206 Costs Incurred. All costs incurred by the Municipality for correction of any Illegal Surface *Stormwater* Connection and/or Blocked Drain shall be a municipal lien on the Improved Property, and collectible pursuant to applicable law, and no agreement between the *Applicant* and the purchaser shall affect the Municipality's enforcement powers or excuse the *Applicant* or purchaser of Improved Property from performance of its obligations.

§207 Promulgation of Forms.

The Municipality shall establish the form of applications, *Applicant*/purchaser agreements and plumber certifications for the operation and enforcement of this Part 2.

§208 Fees.

The following application fees are hereby established:

Evidence of Compliance:                      \$50

Interim Evidence of Compliance        \$200

The Commission shall be empowered to re-evaluate the required fee amount from time to time to make necessary alterations to it. Such alterations shall not be considered an amendment to this Chapter, and may be adopted at any public meeting by resolution.

§209 Penalties.

209.1 Any person violating the provisions of this Part 2 shall, upon conviction, be punished by a fine not to exceed the sum of three hundred dollars (\$300) for each offense, recoverable with costs. Each day a violation is continued shall constitute a separate offense.

209.2 In addition to the penalties and other remedies provided herein, any condition caused or permitted to exist in violation of any of the provisions of this Part 2 will be deemed a public nuisance and may be abated by the Municipality with the costs of such abatement charged to the person or entity owning the property upon which such condition may exist. Such costs will be collected for the use of the Municipality as provided by law, including without limitation by a municipal claim or lien.

209.3 In addition to the enforcement provisions set forth herein, the Municipality may institute an appropriate action or proceeding at law or in equity against a person responsible for violation of any of the provisions of this Part 2 and request either or both of the following remedies:

209.3.1 To cease, correct or remove the violation.

209.3.2 To enforce the penalty provisions of this Part 2 or to seek other remedies as are just and reasonable.

§210 Effective Date.

210.1 This ordinance shall take effect on November 1, 2004.

**PART 3**  
**STORMWATER MANAGEMENT**

General Provisions

§301 Short Title. This ordinance shall be known and may be cited as the “Mt. Lebanon Stormwater Management Ordinance.

§302 Statement of Findings. The governing body of the municipality finds that:

302.1 Inadequate management of accelerated runoff of *stormwater* resulting from development throughout a *watershed* increases runoff volumes, 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.

302.2 A comprehensive program of *stormwater* management (SWM), including 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.

302.3 *Stormwater* is an important water resource that provides *groundwater recharge* for water supplies and supports the base flow of *streams*.

302.4 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.

302.5 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) program.

§303 Purpose. The purpose of this ordinance is to promote health, safety, and welfare within the municipality and its *watershed* by minimizing the harms and maximizing the benefits described in §302 of this ordinance, through provisions designed to:

303.1 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*.

- 303.2 Preserve natural drainage systems.
- 303.3 Manage *stormwater* runoff close to the source, reduce runoff volumes and mimic predevelopment hydrology.
- 303.4 Provide procedures and performance standards for *stormwater* planning and management.
- 303.5 Maintain *groundwater recharge* to prevent degradation of surface and *groundwater* quality and to otherwise protect water resources.
- 303.6 Prevent scour and *erosion* of *stream* banks and streambeds.
- 303.7 Provide proper operation and maintenance of all *stormwater* best management practices (BMPs) that are implemented within the municipality.
- 303.8 Provide standards to meet NPDES permit requirements.
- §304 Statutory Authority. The municipality 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.
- §305 Applicability. All *regulated activities* and all activities that may affect *stormwater* runoff, including *land development* and *earth disturbance activity*, are subject to regulation by this ordinance.
- §306 Repealer. Any other ordinance provision(s) or regulation of the municipality inconsistent with any of the provisions of this ordinance is hereby repealed to the extent of the inconsistency only.
- §307 Severability. In the event that a court of competent jurisdiction declares any section or provision of this ordinance invalid, such decision shall not affect the validity of any of the remaining provisions of this ordinance.
- §308 Compatibility with Other Requirements. 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.
- §309 Erroneous Permit. 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 municipality purporting to validate such a violation.

§310 Waivers.

310.1 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 §310.2. *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 §310.2. If acceptable to the municipality, the municipality may grant the waiver or modification.

310.2 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 §310.1 above.

§311 Version of Regulations and Standards. Any reference to a statute, regulation or standard, shall be interpreted to refer to the latest or most current version of that document.

§312 Definitions. For the purposes of this ordinance, certain terms and words used herein shall be interpreted as follows:

312.1 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.

312.2 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.

312.3 The words “shall” and “must” are mandatory; the words “may” and “should” are permissive.

These definitions do not necessarily reflect the definitions contained in pertinent regulations or statutes, and are intended for this ordinance only.

Act 167: The municipality is empowered to regulate land use activities that affect runoff and surface and *groundwater* quality and quantity by the authority of the Act of October 4, 1978, P.L. 864 (Act 167), 32 P.S. Section 680.1, et seq., as amended, the “Storm Water Management Act.”

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

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 (1) of two (2) broad categories or measures: “structural” or “non-structural.” In this ordinance, non-structural 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 five (5)-year storm) and duration (e.g., twenty-four (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 the 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.

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 five (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 one hundred (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 one hundred (100)-year *floodway*, it is assumed – absent evidence to the contrary – that the *floodway* extends from the *stream* to fifty (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<sup>1,2</sup>).

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 counted as *impervious areas* if they directly 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.docs.dcnr.pa.gov/cs/groups/public/documents/document/dcnr\\_010314.pdf](http://www.docs.dcnr.pa.gov/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*.

Land Development (Development): Inclusive of any or all of the following meanings: (i) the improvement of one (1) lot or two (2) or more contiguous lots, tracts, or parcels of land for any purpose involving (a) a group of two (2) or more buildings or (b) the division or allocation of land or space between or among two (2) 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: Mt. Lebanon, Pennsylvania, Allegheny County, Pennsylvania.

Native Vegetation: Plan species that have historically grown in Pennsylvania and are not invasive species as defined herein.

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 municipality are planned, conducted, or maintained.

Qualified Professional: Any person licensed by the Pennsylvania Department of State or otherwise qualified under Pennsylvania 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 (1) time. For example, the twenty-five (25)-year *return period* rainfall would be expected to occur on average once every twenty-five (25)

years; or stated in another way, the probability of a twenty-five (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 Site Plan: The plan prepared by the developer or the developer's 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.

Watercourse: See *stream*.

Watershed: Region or land area drained by a river, watercourse, or other surface water of this Commonwealth to a downstream point.

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.

### Stormwater Management Standards

#### §313 General Requirements.

- 313.1 For all *regulated activities*, unless preparation of an SWM site plan is specifically exempted in §314:
  - 313.1.1 Preparation and implementation of an approved SWM site plan is required.
  - 313.1.2 No *regulated activities* shall commence until the municipality issues written approval of an SWM site plan, which demonstrates compliance with the requirements of this ordinance.
- 313.2 SWM site plans approved by the municipality, in accordance with §323, shall be on site throughout the duration of the regulated activity.
- 313.3 These standards apply to the landowner and any person engaged in *regulated activities*.
- 313.4 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<sup>4</sup>), No. 363-2134-008, as amended and updated.
- 313.5 *Impervious areas*:
  - 313.5.1 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.
  - 313.5.2 For development taking place in stages, the entire development plan must be used in determining conformance with this ordinance.
  - 313.5.3 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 §315 and the peak rate controls of §316 do not need to be retrofitted to existing *impervious areas* that are not being altered by the proposed regulated activity.

313.6 *Stormwater* flows onto adjacent or downstream property shall not be created, increased, decreased, relocated, impeded, or otherwise altered without written notification of the affected property owner(s). 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.

313.7 All *regulated activities* shall include such measures as necessary to:

313.7.1 Protect health, safety, and property.

313.7.2 Meet the water quality goals of this ordinance by implementing measures to:

313.7.2.1 Minimize disturbance to *floodplains, wetlands, and wooded areas*.

313.7.2.2 Maintain or extend *riparian buffers*.

313.7.2.3 Avoid erosive flow conditions in natural flow pathways.

313.7.2.4 Minimize thermal impacts to waters of this Commonwealth.

313.7.3 Disconnect *impervious surfaces* by directing runoff to *pervious areas*, wherever possible. Incorporate methods described in the *Pennsylvania Stormwater Best Management Practices Manual* (BMP Manual<sup>3</sup>). 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.

- 313.8 *Infiltration* BMPs should be dispersed throughout the *project site* at strategic locations, 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.
- 313.9 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 twenty-four (24) and not more than seventy-two (72) hours from the end of the *design storm*.
- 313.10 The *design storm* precipitation depths to be used in the analysis of peak rates of discharge shall be as obtained in PennDOT's Drainage Manual, Publication 584, Appendix 7A; or obtained from the latest version of the Precipitation-Frequency Atlas of the United States, National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Spring, Maryland. NOAA's Atlas 145 can be accessed at: <https://hdsc.nws.noaa.gov/hdsc/pfds/>.
- 313.11 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.
- 313.12 Various BMPs and their design standards are listed in the BMP Manual<sup>3</sup>.
- 313.13 The municipality 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.

#### §314 Exemptions.

- 314.1 *Regulated activities* that result in cumulative earth disturbances less than one (1) acre are exempt from the requirements in §318 of this ordinance except as provided in §314.2.
- 314.2 Earth disturbances between one-quarter (0.11) acre (five hundred (500) square feet) and one (1) acre of earth disturbance must submit a SWM site plan to the municipality which shall consist of the following items and related supportive material needed to determine compliance with §§315 through 318. The *applicant* can use the protocols in the small project *stormwater management site plan* if the municipality has adopted **Appendix C**.
- 314.2.1 General description of proposed *stormwater* management techniques, including construction specifications of the materials to be used for *stormwater* management facilities.

- 314.2.2 An *erosion* and *sediment* control plan, including all reviews and letters of adequacy from the *conservation district* where appropriate.
- 314.2.3 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.
- 314.2.4 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.
- 314.2.5 Only rate controls shall be required for earth disturbances between 0.11 acres (five hundred (500) square feet) and .25 acres (ten thousand eight hundred ninety (10,890) square feet).
- 314.3 *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 Chapter 102.
- 314.4 *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 Chapter 102.
- 314.5 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.
- 314.6 Exemptions from any provisions of this ordinance shall not relieve the *applicant* from the requirements in §§313.4 through 13.
- 314.7 The municipality may deny or revoke any exemption pursuant to this section at any time for any project that the municipality believes may pose a threat to public health and safety or the environment.
- 314.8 Voluntary green *stormwater* infrastructure (GSI) retrofit projects that are solely intended to better manage runoff from existing development and are not part of a 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.

§315 Volume Controls. The *green infrastructure* and *low impact development* practices provided in the BMP Manual<sup>3</sup> shall be utilized for all *regulated activities* wherever possible. Water volume controls shall be implemented using the *Design Storm Method* or the *Simplified Method* below. Water volume controls shall be implemented using the *Design Storm Method* in §315.1 or the *Simplified Method* in §315.2, or alternative design criteria as allowed by PA Code Title 25, Chapter 102.

315.1 The *Design Storm Method* (CG-1 in the BMP Manual<sup>3</sup>) is applicable as a method to any size of regulated activity. This method requires detailed modeling based on site conditions. The following shall be incorporated into the CG-1 method:

315.1.1 Do not increase the post-development total runoff volume for all storms equal to or less than the two (2)-year twenty-four (24)-hour duration precipitation.

315.1.2 At least the first one (1) inch 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 twenty-four (24) to seventy-two (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 seventy-two (72) hour dewatering time in an area contributory to a combined sewer system before discharge to local *stormwater* systems or the environment.

315.1.3 For modeling purposes:

315.1.3.1 Existing (predevelopment) non-forested *pervious areas* must be considered meadow in good condition.

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

315.2 The *Simplified Method* (CG-2 in the BMP Manual<sup>3</sup>) 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 one (1) acre or for projects that require design of *stormwater* storage facilities. For new *impervious surfaces*:

315.2.1 *Stormwater* facilities shall capture at least the first two (2) inches of runoff from the net increase in *impervious surfaces*.

At least the first one (1) inch of run off 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 for 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 twenty-four (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 seventy-two (72) hour dewatering time in an area contributory to a combined sewer system before discharge to local *stormwater* systems or the environment.

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

315.2.3 This method is exempt from the requirements of §316, Rate Controls.

§316 Rate Controls.

316.1 For areas not covered from an approved Act 1267 *Stormwater* Management Plan:

Post-development discharge rates shall not exceed the pre-development discharge rates for the 1-, 2-, 5-, 10-, 25-, 50-, and 100-year, 24-hour storm events. This is the equivalent to a one hundred percent (100%) *release rate* area when compared to those rates shown in the maps contained in Appendix B (New and Existing *Release Rate* Management Districts). This pre-development to post-development control is not to be misconstrued as the same as the “conditional direct discharge” areas on the *release rate* maps. If it is shown that the peak rates of discharge indicated by the post-development analysis are less than or equal to the peak rates of discharge indicated by the pre-development analysis for 1-, 2-, 5-, 10-, 25-, 50-, and 100-year, 24-hour storms, then the requirements of this section have been met. Otherwise, the *applicant* shall provide additional controls as necessary to satisfy the peak rate of discharge requirement. Peak flows should be computed using the methods included in the chapter titled “*Stormwater* Calculations and Methodology” of the PADEP *Stormwater* Management BMP Manual.

- 316.2 For areas covered from an approved *Act 167 Stormwater* Management Plan:  
Peak flows should be computed using the methods included in Chapter 8 of the PADEP *Stormwater* Management BMP Manual.
- 316.3 *Stormwater* rate control facilities shall include provisions for an overflow to a municipal storm sewer system.
- 316.3.1 This shall include obtaining the required easement(s) where necessary through neighboring properties to construct the connections.
- 316.3.2 At a minimum proof through written correspondence of the attempt to obtain such easements shall be required to be presented to the municipality.
- 316.3.3 In the event easements cannot be obtained, the overflow shall still be constructed and include provisions for discharge to achieve sheet flow such as a level spreader.

§317 *Riparian Buffers.*

- 317.1 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.
- 317.2 Except as required by PA Code Title 25 Chapter 102, the *riparian buffer* easement shall be required for all *streams* with a contributing *watershed* area of greater than ten (10) acres. The *riparian buffer* easement shall be measured to be a minimum of thirty-five (35) feet from the top of the streambank (on each side).
- 317.3 Minimum management requirements for *riparian buffers*:
- 317.3.1 No use or construction within the *riparian buffer* shall be permitted that is inconsistent with the intent of the *riparian buffer* as described in §317.1.

- 317.3.2 Existing native vegetation shall be protected and maintained within the *riparian buffer* easement.
- 317.3.3 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.
- 317.4 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. Any permitted use within the *riparian buffer* easement shall be conducted in a manner that will maintain the extent of the existing one hundred (100)-year *floodplain*, improve or maintain the *stream* stability, and preserve and protect the ecological function of the *floodplain*.
- 317.5 *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.
- 317.6 The following conditions shall apply when public and/or private recreation trails are permitted by the municipality within *riparian buffers*:
- 317.6.1 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.
- 317.6.2 Trails shall be designed to have the least impact on native plant species and other sensitive environmental features.
- 317.7 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.
- 317.8 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.

Stormwater Management (SWM) Site Plan Requirements

§318 Plan Requirements. Appropriate sections from the municipality’s *subdivision* and *land development* ordinance, and other applicable local ordinances, shall be followed in preparing the SWM site plans. In instances where the municipality lacks *subdivision* and *land development* regulations, the content of SWM site plans shall follow the Allegheny County Subdivision and Land Development Ordinance.

The municipality 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 section, when a SWM site plan is found to be deficient, the municipality may either disapprove the submission and require a resubmission, or in the case of minor deficiencies, the municipality may accept submission of modifications.

The following items shall be included in the SWM site plan:

318.1 Provisions for permanent access or maintenance easements for all physical SWM BMPs, such as ponds and *infiltration* structures, as necessary to implement the operation and maintenance (O&M) plan discussed in §318.3.9.

318.2 The following signature block for the municipality:

“(\_\_\_\_\_), on this date (signature date), has reviewed and hereby certifies that SWM site plan meets all design standards and criteria of the Mt. Lebanon *Stormwater* Ordinance, except where waivers have been granted as noted on the plan. The review is based on a survey and plan prepared by others and assumes that all information is correct and valid as submitted.”

318.3 The SWM site plan shall provide the following information:

318.3.1 The overall *stormwater* management concept for the project.

318.3.2 A determination of site conditions in accordance with the BMP Manual<sup>3</sup>. A detailed site evaluation shall be completed for projects proposed in environmentally sensitive areas, such as brownfields.

318.3.3 *Stormwater runoff* design computations and documentation as specified in this ordinance, or as otherwise necessary to demonstrate that the maximum practicable measures have been taken to meet the requirements of this ordinance, including the recommendations and general requirements in §313.

318.3.4 Expected project time schedule.

- 318.3.5 A soil *erosion* and *sediment* control plan, where applicable, as prepared for and submitted to the approval authority.
- 318.3.6 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.
- 318.3.7 Plan and profile drawings of all SWM BMPs, including drainage structures, pipes, open channels, and swales.
- 318.3.8 SWM site plan shall show the locations of existing and proposed on-lot wastewater facilities and water supply wells, property boundaries, existing and proposed topography, point(s) of interest, utilities, and potential utility conflicts.
- 318.3.9 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 including type and schedule/frequency of maintenance activities, personnel and equipment requirements, estimated annual maintenance costs, and method of financing continuing O&M.
- 318.3.10 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.

§319 Plan Submission. Up to five (5) copies of the SWM site plan shall be submitted as follows:

- 319.1 Two (2) copies to the municipality.
- 319.2 One (1) copy to the municipal engineer (when applicable).
- 319.3 One (1) copy to the Allegheny County *Conservation District* (when requested by the district).
- 319.4 One (1) copy to the Allegheny County Sanitary Authority (in areas with combined sewer systems).

§320 Plan Review.

- 320.1 The municipality has designated the municipal engineer as the *designated plan reviewer* of SWM site plans for the municipality, and shall be understood to be the reviewer where indicated as the municipality within this ordinance.

- 320.2 SWM site plans shall be reviewed by the municipality for consistency with the provisions of this ordinance.
- 320.3 The municipality shall notify the *applicant* in writing within forty-five (45) days whether the SWM site plan is approved or disapproved or requires additional documentation. 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 (ninety (90) days). If a longer notification period is provided by other statute, regulation, or ordinance, the *applicant* will be so notified by the municipality.
- 320.4 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.
- 320.5 If the municipality disapproves the SWM site plan, the municipality will state the reasons for the disapproval in writing. The municipality also may approve the SWM site plan with conditions and, if so, shall provide the acceptable conditions for approval in writing.
- 320.6 The applicable review fee, in accordance with §328, must accompany a resubmission of a disapproved SWM site plan.
- §321 Modification of Plans. 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 *designated plan reviewer*, shall require a resubmission of the modified SWM site plan in accordance with this section.
- §322 Resubmission of Disapproved SWM Site Plans. A disapproved SWM site plan may be resubmitted, with the revisions addressing the municipality's concerns, to the municipality in accordance with this section. The applicable review fee, in accord with §328, must accompany a resubmission of a disapproved SWM site plan.
- §323 Authorization to Construct and Term of Validity. The municipality's approval of an SWM site plan authorizes the *regulated activities* contained in the SWM site plan for a maximum term of validity of five (5) years following the date of approval. The municipality may specify a term of validity shorter than five (5) years in the approval for any specific SWM site plan. Terms of validity shall commence on the date the municipality signs the approval for an SWM site plan. If an approved SWM site plan is not completed according to §324 within the term of validity, then the municipality may consider the SWM site plan disapproved and may revoke any and all permits. SWM site plans that are considered disapproved by the municipality shall be resubmitted in accordance with §322 of this ordinance.

§324 Record Drawings, Completion Certificate, and Final Inspection.

- 324.1 The developer shall be responsible for providing record drawings of all SWM BMPs included in the approved SWM site plan. The record drawings and an explanation of any discrepancies with the construction plans shall be submitted to the municipality.
- 324.2 The record drawing submission shall include a certification of completion signed by a *qualified professional* 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.
- 324.3 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.
- 324.4 After receipt of the completion certification by the municipality, the municipality may conduct a final inspection.

Operation and Maintenance

§325 Responsibilities of Developers and Landowners.

- 325.1 The municipality shall make the final determination on the continuing maintenance responsibilities prior to final approval of the SWM site plan. The municipality 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 municipality will accept the facilities. The municipality reserves the right to reject or accept the ownership and operating responsibility for any portion of the *stormwater* management controls.
- 325.2 Facilities, areas, or structures used as SWM BMPs shall be enumerated as permanent real estate appurtenances and recorded as deed restrictions or conservation easements that run with the land.
- 325.3 The O&M plan shall be recorded as a restrictive deed covenant that runs with the land.
- 325.4 The municipality may take enforcement actions against an owner for any failure to satisfy the provisions of this section.

§326 Operation and Maintenance Agreements.

- 326.1 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.
- 326.1.1 The owner, successor and assigns shall maintain all facilities in accordance with the approved maintenance schedule in the O&M agreement.
- 326.1.2 The owner shall convey to the municipality conservation easements to assure access for periodic inspections by the municipality and maintenance, as necessary.
- 326.1.3 The owner shall keep on file with the municipality 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 municipality within ten (10) working days of the change.
- 326.2 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 municipality may perform the services required and charge the owner appropriate fees. Nonpayment of fees may result in a lien against the property.

§327 Performance Guarantee. For SWM site plans that involve *subdivision* and *land development*, the *applicant* shall provide a financial guarantee to the municipality 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 §§509, 510, and 511 of the Pennsylvania Municipalities Planning Code.

Fees and Expenses

- §328 General. The municipality may include all costs incurred into the review fee charged to an *applicant*. The review fee may include, but not be limited to, costs for the following:
- 328.1 Administrative/clerical processing.
- 328.2 Review of the SWM site plan.
- 328.3 Review of a SWM site plan resubmission.
- 328.4 Attendance at meetings.
- 328.5 Inspections.

Prohibitions.

§329 Prohibited Discharges and Connections.

- 329.1 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 a regulated small MS4 or to enter the surface *waters of this Commonwealth* is prohibited.
- 329.2 No person shall allow, or cause to allow, discharges into a regulated small MS4, or discharges into *waters of this Commonwealth*, which are not composed entirely of *stormwater*, except (1) as provided in §329.3 and (2) discharges authorized under a state or federal permit.
- 329.3 The following discharges are authorized unless they are determined to be significant contributors to pollution of a regulated small MS4 or to the *waters of this Commonwealth*:
  - 329.3.1 Discharges or flows from firefighting activities.
  - 329.3.2 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).
  - 329.3.3 Non-contaminated irrigation water, water from lawn maintenance, landscape drainage and flows from riparian habitats and *wetlands*.
  - 329.3.4 Diverted *stream* flows and springs.
  - 329.3.5 Non-contaminated pumped ground water and water from foundation and footing drains and crawl space pumps.
  - 329.3.6 Non-contaminated HVAC condensation and water from geothermal systems.
  - 329.3.7 Residential (i.e., not commercial) vehicle wash water where cleaning agents are not utilized.
  - 329.3.8 Non-contaminated hydrostatic test water discharges, if such discharges do not contain detectable concentrations of TRC.
  - 329.3.9 De-chlorinated swimming pool and hot tub discharges as long as the PADEP guidelines for swimming pool water discharge are followed.

329.4 In the event that the municipality or *DEP* determines that any of the discharges identified in §329.3 significantly contribute pollutants to a regulated small MS4 or to the *waters of this Commonwealth*, the municipality or *DEP* will notify the responsible person(s) to cease the discharge.

§330 Roof Drains and Sump Pumps. Roof drains and sump pumps shall discharge to *infiltration* or vegetative BMPs wherever feasible.

§331 Alteration of SWM BMPs. No person shall modify, remove, fill, landscape, or alter any SWM BMPs, facilities, areas, drainage easements, or structures that were installed as a requirement of this ordinance without the written approval of the municipality.

#### Enforcement and Penalties.

§332 Inspection. Upon presentation of proper credentials, the municipality or its designated agent may enter at reasonable times upon any property within the municipality to inspect the condition of the *stormwater* structures and facilities in regard to any aspect regulated by this ordinance. In addition, the municipality may order an inspection of the *stormwater* structures and facilities at and by such times as to ensure the proper functioning of the structures and facilities in accordance with this ordinance and the purposes for which the structures and facilities were constructed.

§333 Inspection. The landowner or the owner's designee (including the municipality for dedicated and owned facilities) shall inspect SWM BMPs, facilities and/or structures installed under this ordinance according to the following frequencies, at a minimum, to ensure the BMPs, facilities and/or structures continue to function as intended:

333.1 Annually for the first five (5) years.

333.2 Once every three (3) years thereafter.

333.3 During or immediately after the cessation of a ten (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 thirty (30) days following completion of the inspection.

§334 Enforcement.

334.1 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 §314.

- 334.2 It shall be unlawful to violate this ordinance including §331.
- 334.3 Inspections regarding compliance with the SWM site plan are a responsibility of the municipality. Nothing in this ordinance shall constitute a waiver of the obligation of the landowner to install any structure or facility or to correct any defects in any structure or facility. The issuance of any approval or permit is designed to help the municipality manage *stormwater* and is not a certification or guarantee by the municipality that may be relied upon by any person for any reason, and is not a certification as to the adequacy, condition or reliability of any test, structure or facility or other system. The municipality will not be responsible to correct any defects in any structure or facility under any circumstances, even if approvals or permits have been issued or if inspections have been performed or not performed.

§335 Suspension and Revocation.

- 335.1 Any approval or permit issued by the municipality pursuant to this ordinance may be suspended or revoked for:
- 335.1.1 Non-compliance with or failure to implement any provision of the approved SWM site plan or O&M agreement.
  - 335.1.2 A violation of any provision of this ordinance or any other applicable law, ordinance, rule, or regulation relating to the regulated activity.
  - 335.1.3 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.
- 335.2 A suspended approval may be reinstated by the municipality when:
- 335.2.1 The municipality has inspected and approved the corrections to the violations that caused the suspension.
  - 335.2.2 The municipality is satisfied that the violation has been corrected.
- 335.3 An approval that has been revoked by the municipality cannot be reinstated. The *applicant* may apply for a new approval under the provisions of this ordinance.
- 335.4 If a violation causes no immediate danger to life, public health, or property, at its sole discretion, the municipality may provide a limited time period for the owner to correct the violation. In these cases, the municipality will provide the

owner, or the owner's designee, with a written notice of the violation and the timer period allowed for the owner to correct the violation. If the owner does not correct the violation within the allowed time period, the municipality may revoke or suspend any, or all, applicable approvals and permits pertaining to any provision of this ordinance.

§336 Penalties.

- 336.1 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 three hundred dollars (\$300) for each violation, recoverable with costs. Each day that the violation continues shall be a separate offense and penalties shall be cumulative.
- 336.2 In addition, the municipality 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.

§337 Appeals.

- 337.1 Any person aggrieved by any action of the municipality or its designee, relevant to the provisions of this ordinance, may appeal to the municipality within 30 days of that action.
- 337.2 Any person aggrieved by any decision of the municipality, 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 thirty (30) days of the municipality's decision.

§338 References.

- 338.1 U.S. Department of Agriculture, National Resources Conservation Service (NRCS). *National Engineering Handbook*. Part 630: Hydrology, 1969-2001. Originally published as the *National Engineering Handbook*, Section 4: Hydrology. Available from the NRCS online at: <http://www.nrcs.usda.gov/>.
- 338.2 U.S. Department of Agriculture, Natural Resources Conservation Service. 1986. *Technical Release 55: Urban Hydrology for Small Watersheds*, 2<sup>nd</sup> Edition. Washington, D.C.
- 338.3 Pennsylvania Department of Environmental Protection. No. 363-0300-002 (December 2006), as amended and updated. *Pennsylvania Stormwater Best Management Practices Manual*. Harrisburg, PA.

- 338.4 Pennsylvania Department of Environmental Protection. No. 363-2134-008 (March 31, 2012), as amended and updated. *Erosion and Sediment Pollution Control Program Manual*. Harrisburg, PA.
- 338.5 U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, Hydrometeorological Design Studies Center. 2004-2006. *Precipitation-Frequency Atlas of the United States, Atlas 14, Volume 2, Version 3.0* Silver Spring, Maryland. Internet address: <http://hdsc.nws.noaa.gov/hdsc/pfds/>.

**APPENDIX A**

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

**THIS AGREEMENT**, made and entered into this \_\_\_\_\_ day of 20\_\_\_\_, by and between \_\_\_\_\_(hereinafter the “Landowner”), and \_\_\_\_\_, \_\_\_\_\_County, Pennsylvania (hereinafter “Municipality”);

**WITNESSETH**

**WHEREAS**, the Landowner is the owner of certain real property as recorded by deed in the land records of \_\_\_\_\_ 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 Site 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 on-site BMPs by the Landowner; provided, however, that this Agreement shall not be deemed to create 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 intends to 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 \_\_\_\_\_ 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:

\_\_\_\_\_ (City, Borough, Township)

County of \_\_\_\_\_, Pennsylvania

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

**GIVEN UNDER MY HAND THIS** \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
**NOTARY PUBLIC**

\_\_\_\_\_  
**(SEAL)**

## APPENDIX B

### SMALL PROJECT STORMWATER MANAGEMENT SITE PLAN

This small project *stormwater* site plan has been developed to assist those proposing residential projects to meet the requirements of the *Allegheny County Stormwater Management Plan Model 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 earth disturbances between one-quarter (0.25) acre and one (1) acre of earth disturbance (§314.2) and using *The Simplified Method* (CG-2 in the BMP Manual<sup>3</sup>) for Volume Control as described in §315.2. 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 §314.2 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

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.

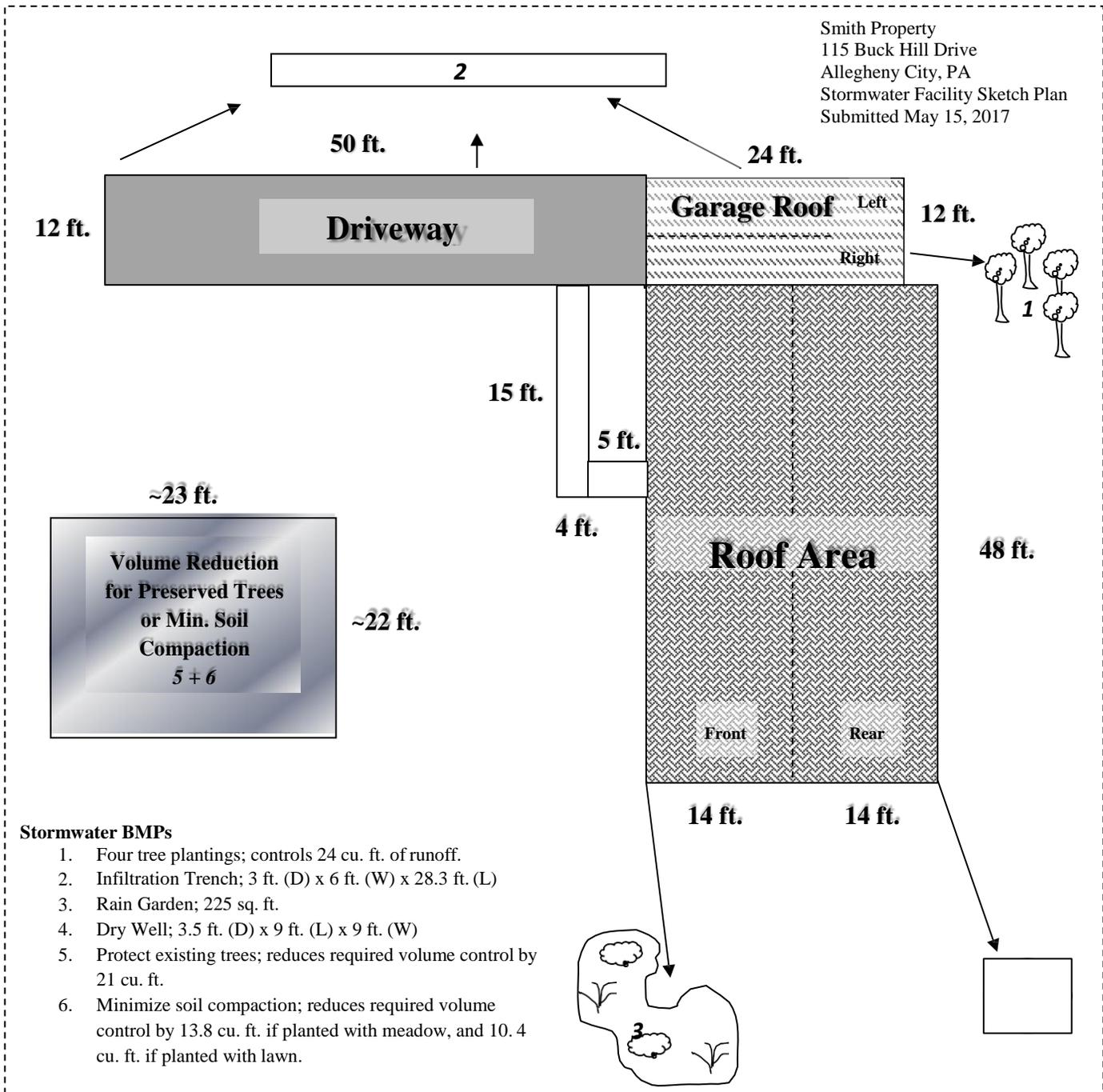
### Site Plan Example: Controlling runoff volume from a proposed home site

#### Step 1: Determine Total Impervious Surfaces

Impervious Surface			Area (sq. ft.)
House Roof (Front)	14 ft. x 48 ft.	=	672 sq. ft.
House 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.

<https://www.youtube.com/watch?v=2eQ1oal44wU&authuser=2>

Figure 1: Sample Site Sketch Plan



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

$$\text{Volume (cu. ft.)} = (\text{Total impervious area in square feet} \times 2 \text{ inches of runoff}) / 12 \text{ inches}$$

$$(3,000 \text{ sq. ft.} \times 2 \text{ inches of runoff}) / 12 \text{ inches} = 500 \text{ cu. ft.}$$

## Example continued:

### 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 residential 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

### 1. 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.

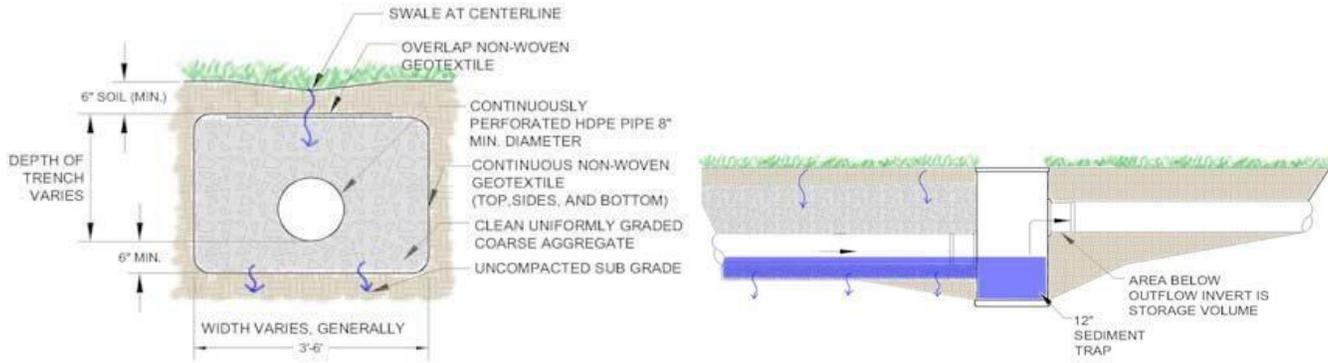
#### Design Considerations:

- 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 one percent (1%).
- A minimum of six inches (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



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:  
 $(1224 \text{ sq. ft.} \times 2 \text{ inches of runoff}) / 12 \text{ ft.} = 204 \text{ cu. ft.} / 0.4^* = 510 \text{ cu. ft.}$   
 (\*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.

$510 \text{ cu. ft.} / 3 \text{ ft.} = 170 \text{ sq. ft.}$

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:  $L = 170 \text{ sq. ft.} / 6 \text{ ft.} = 28.3 \text{ ft.}$

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

## 2. 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.).

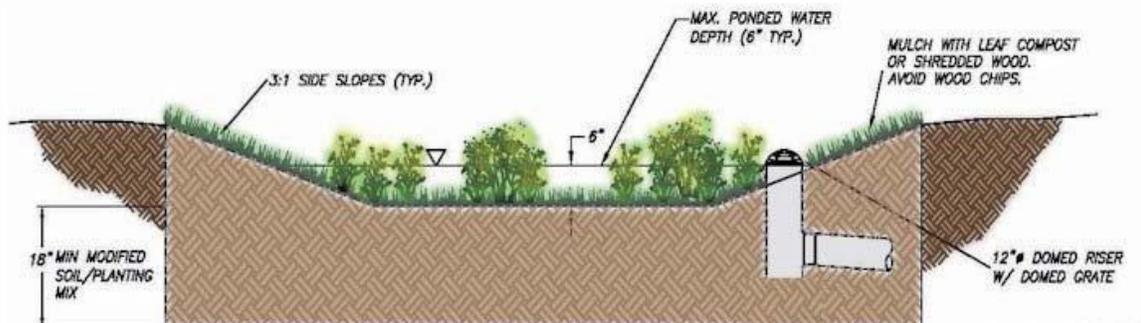
### Design Considerations:

- A maximum of three-to-one (3:1) side slope is recommended.
- The depth of a rain garden can range from six to eight (6-8") inches. Ponded water should not exceed six (6) inches.
- The rain garden should drain within seventy-two (72) hours.
- The garden should be at least ten to 20 (10-20) feet from a building's foundation and twenty-five (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](http://pa.audubon.org/habitat/PDFs/RGBrochure_complete.pdf) for a native plant list. To find native plant sources go to [www.pawildflower.org](http://www.pawildflower.org).
- At the rain garden location, the water table should be at least two feet (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:

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

$$672 \text{ sq. ft.} / 6 \text{ (depth of rain garden in inches)} = 112 \text{ sq. ft.}$$

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

$$112 \text{ sq. ft.} * 2 = 224 \text{ sq. ft.}$$

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

### 3. 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* area, etc.) will ensure that additional *runoff* is safely conveyed downstream.

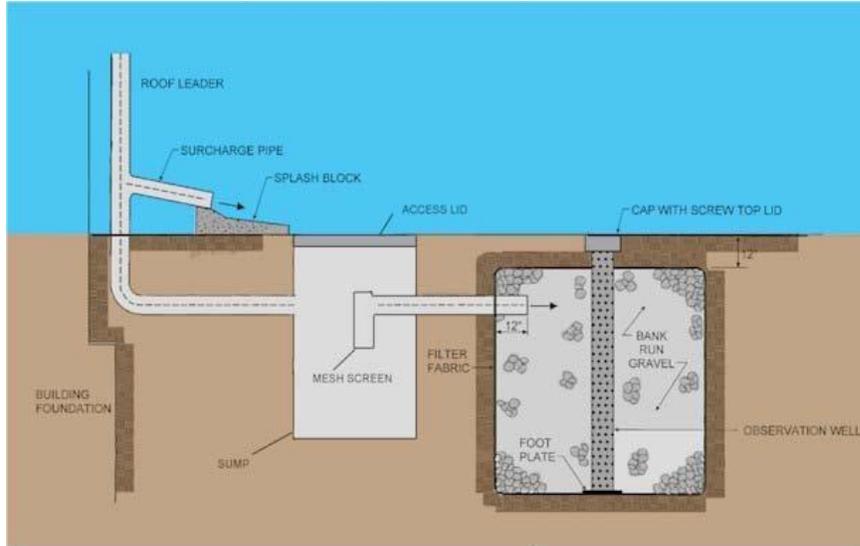
#### Design Considerations:

- 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.
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2. Determine required volume control:

$$(672 \text{ sq. ft.} \times (2 \text{ inches of runoff} / 12 \text{ inches/ft.})) = 112 \text{ cu. ft.}$$

$$112 \text{ cu. ft.} / 0.4 = 280 \text{ cu. ft. (assuming the 40% void ratio in the gravel bed)}$$

3. Sizing the dry well:

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

$$3.5 \text{ ft.} \times L \times L = 280 \text{ cu. ft.}; \quad L \times L = 280 \text{ cu. ft.} / 3.5 \text{ ft.}; \text{ thus } L \times L = 80 \text{ sq. ft.}; L=9 \text{ (approx)}$$

$$\text{Dimensions} = 3.5 \text{ ft. (D)} \times 9 \text{ ft. (L)} \times 9 \text{ ft. (W)}$$

# NonStructural BMPs

## 1. 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 four inches (4") trunk caliper or larger.
- Existing tree canopy must be within one hundred (100) feet 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 six (6) feet in height and have a two inch (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.
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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.

$$24 \text{ cu. ft.} / 6 \text{ cu. ft.} = 4 \text{ Deciduous Trees}$$

Determining the volume reduction for preserving existing trees:

1. Calculate approximate area of the existing tree canopy:

$$\sim 22 \text{ sq. ft.} \times \sim 23 \text{ sq. ft.} = 500 \text{ sq. ft.}$$

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

$$(500 \text{ sq. ft.} \times 0.5 \text{ inches}) / 12 = 21 \text{ cu. ft.}$$

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;

$$510 \text{ cu. ft.} - 21 \text{ cu. ft.} = 489 \text{ cu. ft.}$$

$$489 \text{ cu. ft.} / 3 \text{ ft. (Depth)} = 163 / 6 \text{ ft. (Width)} = 27.1 \text{ ft. (Length)}$$

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.

## 2. 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:  
 $\sim 22 \text{ sq. ft.} \times \sim 23 \text{ sq. ft.} = 500 \text{ sq. ft.}$

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

$$(500 \text{ sq. ft.} \times 1/3 \text{ inch of } runoff) / 12 = 13.8 \text{ cu. ft.}$$

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

$$(500 \text{ sq. ft.} \times 1/4 \text{ inch of } runoff) / 12 = 10.4 \text{ cu. ft.}$$

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**

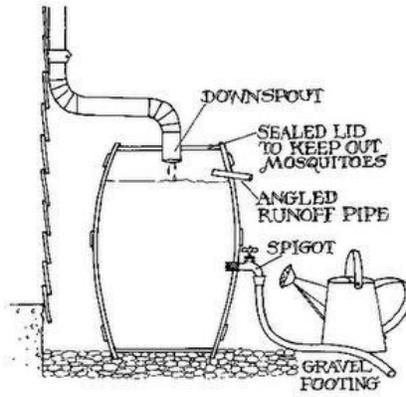
#### **Rain Barrels**

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 fifty (50) and two hundred (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 twenty-five percent (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.
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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:  
 $(144 \text{ sq. ft.} \times 1 \text{ inch of runoff}) / 12 \text{ inches} = 12 \text{ cu. ft.}$
4. Size the rain barrel:

$$1 \text{ cu. ft.} = 7.48 \text{ gallons}$$

$$12 \text{ cu. ft.} \times 7.48 = 90 \text{ gallons}$$

$$90 \text{ gallons} \times (0.25^*) = 22.5 \text{ gallons} \text{ (*assuming that the rain barrel is always at least 25\% full)}$$

$$90 \text{ gallons} + 22.5 \text{ gallons} = 112 \text{ gallons}$$

*The rain barrel or barrels should be large enough to hold at least 112 gallons of water.*

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