

ARTICLE IV. STORMWATER MANAGEMENT

SECTION 401. GENERAL REQUIREMENTS

1. All REGULATED ACTIVITIES shall include such measures as necessary to:
 - A. Protect health, safety, and property;
 - B. Meet the water quality goals of this ORDINANCE by implementing measures to:
 - (1) Protect and/or improve the function of FLOODPLAINS, WETLANDs, and WOODLAND AREAs.
 - (2) Protect and/or improve native plant communities including those within the RIPARIAN BUFFER or RIPARIAN FOREST BUFFER.
 - (3) Protect and/or improve NATURAL DRAINAGEWAYs from EROSION.
 - (4) Minimize thermal impacts to WATERS OF THE COMMONWEALTH.
2. For all REGULATED ACTIVITIES, EROSION and SEDIMENT Control 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 and the Clean Streams Law. Various BMPs and their design standards are listed in the *Pennsylvania Department of Protection, Erosion and Sediment Pollution Control Program Manual* (E&S Manual), No. 363-2134-008 (March 2012), as amended and updated.
3. A variety of STRUCTURAL and NON-STRUCTURAL BMPs should be employed and tailored to suit the PROJECT SITE. Refer to the MTSMRM.
4. A planting plan is required for all vegetated STORMWATER BMPs. (See Section 403.7.)
 - A. Native or naturalized/non-INVASIVE VEGETATION suitable to the soil and hydrologic conditions of the site shall be used unless otherwise specified in the BMP MANUAL.
 - B. INVASIVE VEGETATION may not be included in any planting schedule. (See Invasive Plants in Pennsylvania as published by the Department of Conservation and Natural Resources.)
 - C. The limit of existing, NATIVE VEGETATION to remain shall be delineated on the plan along with proposed CONSTRUCTION protection measures.
 - D. Prior to CONSTRUCTION, a tree protection zone shall be delineated at the dripline of the tree canopy. The tree protection zone of trees scheduled to remain shall be marked. Groups of trees may be marked by a protection zone along the outer most dripline boundary. A forty-eight (48) inch high snow fence or forty-eight (48) inch high CONSTRUCTION fence mounted on steel posts located eight (8) feet on center shall be placed along the tree protection boundary. No CONSTRUCTION, storage of

material, temporary parking, pollution of soil, or regrading shall occur within the tree protection zone.

E. All planting shall be performed in conformance with good nursery and landscape practice. Plant materials shall conform to the standards recommended by the American Association of Nurseryman, Inc. in the American Standard of Nursery Stock.

- (1) Planting designs are encouraged to share planting space for optimal root growth whenever possible.
- (2) No staking or wiring of trees shall be allowed without a maintenance note requiring the stake and/or wire to be removed within one (1) year of planting.

5. All STORMWATER MANAGEMENT PLANS shall be designed and certified by individuals registered in the Commonwealth of Pennsylvania and qualified to perform such duties.

6. STORMWATER MANAGEMENT FACILITIES which involve a State Highway shall be subject to the approval of PennDOT.

7. STORMWATER MANAGEMENT FACILITIES located within or affecting the FLOODPLAIN of any WATERCOURSE shall also be subject to the requirements of The Floodplain Ordinance of Manheim Township which regulates CONSTRUCTION and DEVELOPMENT within AREAS of the TOWNSHIP subject to FLOODING. STORMWATER RUNOFF from a PROJECT SITE shall flow directly into a WATERCOURSE or into an existing STORM SEWER, or onto adjacent properties in an approved manner similar to the RUNOFF characteristics of the pre-DEVELOPMENT flow. Maximum use shall be made of the existing on-site natural and man-made STORMWATER MANAGEMENT FACILITIES.

8. STORMWATER RUNOFF shall not be transferred from one WATERSHED to another unless the WATERSHEDs are sub-WATERSHEDs of a common WATERSHED which join together within the perimeter of the property, and the effect of the transfer does not alter the PEAK DISCHARGE onto downstream lands, or DRAINAGE EASEMENTS from the affected landowners are provided.

9. All STORMWATER RUNOFF flowing over or through the PROJECT SITE shall be considered in the design of the STORMWATER MANAGEMENT FACILITIES.

10. CARBONATE GEOLOGY Report. A detailed geologic report prepared by a GEOLOGIST or ENGINEER must be submitted as part of the STORMWATER MANAGEMENT PLAN and shall include the following:

- A. The location of the following KARST features:
 - (1) Sinkholes.
 - (2) Closed depressions.
 - (3) LINEAMENTs in carbonate AREAS.

- (4) Fracture traces.
- (5) Caverns.
- (6) Intermittent lakes.
- (7) EPHEMERAL and DISAPPEARING STREAMs.
- (8) Bedrock pinnacles (surface or subsurface).

B. The design of all STORMWATER MANAGEMENT FACILITIES over KARST features shall include an evaluation of measures to minimize adverse effects and to prevent groundwater contamination, and where necessary, sinkhole formation.

C. A plan for remediation of any identified KARST features shall be provided.

D. Impacts of STORMWATER MANAGEMENT FACILITIES on adjacent KARST features and impacts of KARST features on adjacent STORMWATER MANAGEMENT FACILITIES shall be identified.

E. STORMWATER shall not be discharged into sinkholes.

F. It shall be the APPLICANT's responsibility to verify if the PROJECT SITE is underlain by CARBONATE GEOLOGY.

G. Whenever a STORMWATER MANAGEMENT FACILITY will be located in an AREA underlain by CARBONATE GEOLOGY, a geological evaluation of the proposed location by a GEOLOGIST or ENGINEER shall be conducted to determine the design parameters of proposed BMPs. The evaluation may include the use of impermeable liners to reduce or eliminate the separation distances. Additionally, the evaluation shall at a minimum, address soil permeability, depth to bedrock, seasonal high water table, susceptibility for sinkhole formation, suitability of STORMWATER MANAGEMENT FACILITIES, subgrade stability and maximum infiltration capacity in depth of water per unit AREA.

SECTION 402. STORMWATER MANAGEMENT PERFORMANCE STANDARDS

1. General. The following general standards shall be applied to all REGULATED ACTIVITIES within the TOWNSHIP to promote flow and volume attenuation, water quality, EROSION and SEDIMENT Control and FLOOD control.

A. The APPLICANT of any PROJECT SITE in the TOWNSHIP that does not fall under the impervious credit or exemption criteria in Section 109 shall submit a STORMWATER MANAGEMENT PLAN application consistent with this ORDINANCE to the TOWNSHIP for review, approval and final recordation.

B. IMPERVIOUS SURFACE shall include, but not be limited to, any roof, decking, parking or driveway AREAS and any new streets and sidewalks. Any AREAS designed to initially be gravel or crushed stone or to be placed on gravel or crushed stone shall be assumed to be impervious.

2. VOLUME CONTROL.

VOLUME CONTROL BMPs are intended to maintain existing hydrologic conditions for SMALL STORM EVENTS by promoting GROUNDWATER RECHARGE and/or evapotranspiration as described in this Section. RUNOFF VOLUME CONTROLS shall be implemented using the *Design Storm Method* described in Subsection A and B below, or through continuous modeling approaches or other means as described in the BMP MANUAL.

A. The *Design Storm Method* is applicable to any size of REGULATED ACTIVITY. This method requires detailed modeling based onsite conditions.

(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 STORM EVENT.

B. For modeling purposes:

(1) Existing (pre-DEVELOPMENT) non-forested pervious AREAS must be considered meadow in good condition.

(2) When the existing PROJECT SITE contains IMPERVIOUS SURFACE, twenty percent (20) percent of existing IMPERVIOUS SURFACE to be disturbed shall be considered meadow in good condition in the model for EXISTING CONDITIONS.

3. Rate Control. Rate control for storms, up to the One-Hundred (100) Year STORM EVENT, is essential to protect against immediate downstream EROSION and FLOODING. The following shall apply:

A. Match Pre-DEVELOPMENT Hydrograph.

APPLICANTS shall provide INFILTRATION FACILITIES or utilize other techniques which will allow the post-DEVELOPMENT One-Hundred (100) Year hydrograph to match the pre-DEVELOPMENT One-Hundred (100) Year hydrograph, along all parts of the hydrograph, for the PROJECT SITE. To match the pre-DEVELOPMENT hydrograph, the post-DEVELOPMENT peak rate must be less than or equal to the pre-DEVELOPMENT peak rate, and the post-DEVELOPMENT RUNOFF volume must be less than or equal to the pre-DEVELOPMENT volume for the same STORM EVENT. A shift in hydrograph peak time of up to five (5) minutes and a rate variation of up to five (5) percent at a given time may be allowable to account for the timing affect of BMPs used to manage the peak rate and RUNOFF volume. VOLUME CONTROL volumes as given in Section 402.5 and Section 402.6 may be used as part of this option; or

B. Where the pre-DEVELOPMENT hydrograph cannot be matched, the calculated peak rates of RUNOFF for STORMWATER originating on the PROJECT SITE must meet the following conditions, for all WATERSHEDS flowing from the PROJECT SITE unless the pre-DEVELOPMENT hydrograph is not exceeded at all points in time:

- (1) The two (2) year post-DEVELOPMENT peak flow shall not exceed fifty (50) percent of the two (2) year pre-DEVELOPMENT peak flow.
- (2) The five (5) year post-DEVELOPMENT peak flow shall not exceed fifty (50) percent of the five (5) year pre-DEVELOPMENT peak flow.
- (3) The ten (10) year post-DEVELOPMENT peak flow shall not exceed fifty (50) percent of the ten (10) year pre-DEVELOPMENT peak flow.
- (4) The twenty-five (25) year post-DEVELOPMENT peak flow shall not exceed fifty (50) percent of the twenty-five (25) year pre-DEVELOPMENT peak flow.
- (5) The fifty (50) year post-DEVELOPMENT peak flow shall not exceed fifty (50) percent of the fifty (50) year pre-DEVELOPMENT peak flow.
- (6) The One-Hundred (100) Year post-DEVELOPMENT peak flow shall not exceed fifty (50) percent of the One-Hundred (100) Year pre-DEVELOPMENT peak flow.

4. Storage facilities, including normally dry, open top facilities, shall completely drain the storage over a period of time not less than twenty-four (24) hours and not more than seventy-two (72) hours from the end of the DESIGN STORM.

5. Any portion of the VOLUME CONTROL storage that meets the following criteria may also be used as rate control storage;

- A. VOLUME CONTROL storage that depends on infiltration is designed according to the infiltration standards in this ORDINANCE.
- B. The VOLUME CONTROL storage which will be used for rate control is that storage which is available within twenty-four (24) hours from the end of the DESIGN STORM based on the stabilized infiltration rate and/or the evapotranspiration rate.

6. VOLUME CONTROL storage facilities designed to infiltrate shall avoid the least permeable HSGs at the PROJECT SITE.

7. EROSION and SEDIMENTATION Controls are to be designed and maintained throughout the construction phase of the PROJECT SITE, as specified in Section 302.5.C.

SECTION 403. METHODS OF CALCULATION OF RUNOFF

1. Any STORMWATER RUNOFF calculations involving drainage AREAs greater than two hundred (200) acres and Time of Concentration (T_c) greater than sixty (60) minutes, including on- and off-site AREAs, shall use generally accepted calculation techniques based on the NRCS SOIL-COVER COMPLEX METHOD.
2. STORMWATER RUNOFF from all PROJECT SITEs shall be calculated using the most appropriate method, given the site considerations and drainage characteristics associated

with the design.

A. Table IV-1 summarizes acceptable computation methods. It is assumed that all methods will be selected by the design professional based on the individual limitations and suitability of each method for a particular PROJECT SITE.

Table IV-1
Acceptable Computation Methodologies for Stormwater Management Plans

Method	Method Developed By	Applicability
TR-20 (or commercial computer package based on TR-20)	USDA NRCS	Applicable where use of full hydrology computer model is desirable or necessary.
TR-55 (or commercial computer package based on TR-55)	USDA NRCS	Applicable for land development plans within limitations described in TR-55.
HEC-1/HEC-HMS	US Army Corps of ENGINEERS	Applicable where use of full hydrologic computer model is desirable or necessary.
Rational method (or commercial computer package based on rational method)	Emil Kuichling (1889)	For project sites less than 200 acres, T_c less than or equal to 60 min. or as approved by the Township.
EFH2 (Engineering Field Handbook, Chapter 2)	USDA NRCS	Applicable to rural and undeveloped AREAs subject to the Program Limits.
Other methods	Varies	Other methodologies approved by the Township.

B. Rainfall amounts and intensity shall utilize published data based on the methodology selected for the WATERSHED being studied. In general the National Weather Service's website http://hdsc.nws.noaa.gov/hdsc/pfds/org/pa_pfds.html should be the source referred to for rainfall input.

C. Hydrographs may be obtained from NRCS methods such as TR-55, TR20, or from use of the "modified" or "unit hydrograph" rational methods. If "modified" or "unit hydrograph" rational methods are used, the ascending leg of the hydrograph shall have a length equal to three (3) times the Time of Concentration($3xT_c$) and the descending leg shall have a length equal to seven (7) times the Time of Concentration($7xT_c$) to approximate an SCS Type II hydrograph.

D. RUNOFF calculations shall include a hydrologic and hydraulic analysis indicating volume and velocities of flow and the GRADES, sizes, and capacities of water

carrying structures, SEDIMENT BASINS, retention and detention structures and sufficient design information to construct such facilities. RUNOFF calculations shall also indicate both pre-DEVELOPMENT and post-DEVELOPMENT rates for PEAK DISCHARGE of STORMWATER RUNOFF from all discharge points from the PROJECT SITE.

E. Criteria and assumptions to be used in the determination of STORMWATER RUNOFF and design of STORMWATER MANAGEMENT FACILITIES are as follows:

- (1) RUNOFF coefficients shall be based on the information contained in the MTSMRM, if the actual land use is listed in the MTSMRM. If the actual land use is not listed in the MTSMRM, RUNOFF coefficients shall be chosen from other published documentation, and a copy of said documentation shall be submitted with the STORMWATER MANAGEMENT PLAN.
- (2) For the purpose of calculating pre-DEVELOPMENT PEAK DISCHARGES, all RUNOFF coefficients, both on-site and off-site, shall be based on actual land use assuming summer or good land conditions. RUNOFF coefficients for off-site discharges used to design facilities shall be based on actual land use assuming winter or poor land conditions.
- (3) Times of concentration shall utilize the worksheet provided in the MTSMRM.

F. The APPLICANT may use STORMWATER credits for NON-STRUCTURAL BMPs in accordance with the BMP MANUAL. The allowable reduction will be determined by the TOWNSHIP or TOWNSHIP ENGINEER.

G. Peak rate control is not required for off-site RUNOFF. Off-site RUNOFF may be bypassed around the site provided all other discharge requirements are met. If off-site RUNOFF is routed through rate control facilities, RUNOFF coefficients for off-site discharges used to design those rate control facilities shall be based on actual land use assuming winter or poor land conditions.

3. Design Standards - General.

A. All STORM SEWER PIPEs, CULVERTs, BRIDGEs, gutters, and SWALEs (excluding detention and retention basin outfall structures) conveying water originating only from within the boundaries of the PROJECT SITE shall be designed for a twenty-five (25) year STORM EVENT. All other STORM SEWER PIPEs, CULVERTs and BRIDGEs, gutters, and SWALEs (excluding detention and retention basin outfall structures and excluding sole access structures) conveying water originating from off-site shall be designed for a fifty (50) year STORM EVENT. Sole access structures shall be designed to convey the One-Hundred (100) Year STORM EVENT without roadway overtopping. Drainage and ACCESS EASEMENTS shall be provided to encompass the water surface limits of the One-Hundred (100) Year STORM EVENT throughout the PROJECT SITE and to provide access from a public street to the STORMWATER Facility. Easements shall begin at the furthest upstream property line of the proposed DEVELOPMENT in a WATERSHED.

- B. The maximum water depth for aboveground storage facilities shall not exceed six (6) feet measured at the emergency spillway design water surface.
- C. INLETS shall not be placed in AREAs other than streets and PARKING LOTs, unless otherwise approved by the TOWNSHIP.
- D. Water carrying facilities, roof drains, and sump pump discharges shall not directly discharge water into a street right-of-way, sanitary sewer, STORM SEWER or roadside gutter. Roof leader and sump pump discharge piping shall terminate at least five (5) feet beyond the exterior foundation wall of any structure, but no closer than ten (10) feet from a property line or the street right-of-way line.
- E. All existing and natural WATERCOURSES, CHANNELs, drainage systems, WETLANDs, and AREAs of surface water concentration shall be maintained in their existing condition unless an ALTERATION is approved by the TOWNSHIP and any other necessary approving body.
- F. Flow velocities from any STORM SEWER may not result in EROSION of the receiving CHANNEL.
- G. Adequate EROSION protection shall be provided along all OPEN CHANNELs and at all points of discharge.
- H. The following conditions shall be met for all SWALEs:
 - (1) Capacities and velocities shall be computed using the MANNING EQUATION. The minimum design parameters shall be as follows:
 - (a) For vegetated SWALEs two design considerations shall be met:
 - [i] The first shall consider CHANNEL velocity and stability based upon a low degree of retardance ("n" of 0.03);
 - [ii] The second shall consider CHANNEL capacity based upon a high degree of retardance ("n" of 0.05). All vegetated SWALEs shall have a minimum slope of one (1) percent unless otherwise approved by the TOWNSHIP ENGINEER.
 - (b) The "n" factors to be used shall be chosen from the MTSMRM.
- I. All STORMWATER structures INLETS and OUTLETS smaller than a forty-eight (48) inch equivalent diameter which convey STORMWATER from residential LOTs to a street or from a street to residential LOTs shall extend from the street right-of-way a minimum distance of 2/3 the length of the longest adjacent LOT dimension.
- J. STORMWATER MANAGEMENT FACILITIES not located within a public right-of-way shall be contained in and centered within a DRAINAGE EASEMENT. Easements shall follow property boundaries where possible.
- K. The last downstream structure, prior to the CONVEYANCE system leaving the public right-of-way, shall have a one (1) foot sump created below the exiting PIPE's

invert. All other STORM SEWER manholes and INLETS shall have smooth flow lines grouted as shown in the MTISM.

L. Headwalls and endwalls shall be used where STORMWATER RUNOFF enters or leaves the STORM SEWER horizontally from a natural or man-made CHANNEL. PennDOT Type "DW" headwalls and endwalls shall be utilized for PIPEs twelve (12) inches and larger in diameter. End sections shall be utilized for PIPEs smaller than twelve (12) inches in diameter.

4. Design Standards - Facilities within the public street right-of-way.

A. STORM SEWER PIPEs, other than those used for street subbase underdrains shall have a minimum diameter of fifteen (15) inches. Structural calculations that address the actual design requirements will be required where installation conditions merit.

B. STORM SEWER PIPEs and CULVERTs shall be installed with a minimum slope of one-half (0.5) percent.

C. Allowable PIPE, CULVERT, and BRIDGE materials shall be as outlined in the MTISM.

D. All STORM SEWER crossings of streets shall not deviate by more than fifteen (15) degrees from perpendicular to the street centerline.

E. All STORM SEWER PIPE and CULVERTs shall be laid to a minimum depth of twelve (12) inches from finished subgrade to the crown of PIPE in paved AREAs and twelve (12) inches from finished GRADE to the crown of the PIPE in grassed AREAs.

F. Curves or angle points in PIPEs or box CULVERTs without the use of an INLET or manhole are prohibited unless pre-approved by the TOWNSHIP. Tee joints, elbows, and wyes shall be limited for use in constructing underground DETENTION BASINS, underground retention basins, underdrain systems, and roof leader collection systems.

G. Manholes, INLETs, headwalls, endwalls and end sections shall conform to the requirements of the PennDOT, Publication 408, as modified by the adopted TOWNSHIP standards found in the MTISM.

H. INLETs shall be placed on both sides of the street at low spots, at a maximum of 600 feet apart along a STORM SEWER PIPE or CULVERT, at points of abrupt changes in the horizontal or vertical directions of STORM SEWERS. INLETs shall normally be along the curbline at, or beyond the curb radius points. Within the street right-of-way, the gutter spread based on the twenty-five (25) year STORM EVENT shall be no greater than one-half (1/2) of the travel lane width and have a maximum depth of three (3) inches at the curb line. A parking lane shall not be considered as part of the travel lane. In the absence of pavement markings separating a travel lane from the parking lane, the parking lane shall be assumed to be eight (8) feet wide if parking is permitted on the street. INLETs shall be depressed two (2) inches below the GRADE of the gutter or ground surface for streets with a cartway width greater than twenty-

eight (28) feet. INLETS shall not be depressed for streets having a cartway width of twenty-eight (28) feet or less. At intersections and access driveways, the depth of flow across the through streets and across the access driveways (proposed and existing) shall not exceed one and one-half (1-1/2) inch for the twenty-five (25) year STORM EVENT. Manholes may be substituted for INLETS at locations where INLETS are not required to handle surface RUNOFF.

- I. Placement or use of BMPs within the public street right-of-way shall only be allowed after TOWNSHIP approval.
5. Design Standards - Facilities outside of the public street right-of-way.
 - A. The design of all BMP facilities shall incorporate best engineering practices. The design ENGINEER shall utilize all available design criteria in the BMP MANUAL to meet the requirements of this ORDINANCE and shall provide all the necessary backup documentation with their submittal.
 - B. The BMPs must be designed to protect and maintain existing uses (e.g., drinking water use; cold water fishery use) and maintain the level of Water Quality necessary to protect those uses in all streams, and to protect and maintain Water Quality in "Special Protection" streams, as required by statewide regulations at 25 Pa. Code Chapter 93 .
 - C. To control post-CONSTRUCTION STORMWATER impacts from REGULATED EARTH DISTURBANCE ACTIVITIES, STATE WATER QUALITY REQUIREMENTS can be met by BMPs, including site design, which provide for replication of pre-CONSTRUCTION STORMWATER infiltration and RUNOFF conditions, so that post-CONSTRUCTION STORMWATER discharges do not degrade the physical, chemical, or biological characteristics of the receiving waters.
 - D. PADEP has regulations that require municipalities to ensure that design, implementation and maintenance of BMPs that control RUNOFF from new DEVELOPMENT and REDEVELOPMENT after REGULATED EARTH DISTURBANCE ACTIVITIES are complete. These requirements include the need to implement post-CONSTRUCTION STORMWATER BMPs with assurance of long-term operations and maintenance of those BMPs.
 - E. No REGULATED EARTH DISTURBANCE ACTIVITIES within the TOWNSHIP shall commence until approval by the TOWNSHIP of a plan that demonstrates compliance with STATE WATER QUALITY REQUIREMENTS after CONSTRUCTION is complete.
6. ONE-HUNDRED (100) YEAR FLOODPLAIN delineation.
 - A. The ONE-HUNDRED (100) YEAR FLOODPLAIN must be determined and delineated on all plans in accordance with The Floodplain Ordinance of Manheim Township.
 - B. The lowest floor elevation of all new CONSTRUCTION and substantial IMPROVEMENTS to buildings and structures shall be in accordance with The

Floodplain Ordinance of Manheim Township.

- C. The boundaries of the ONE-HUNDRED (100) YEAR FLOODPLAIN must be field staked prior to any CONSTRUCTION.
- D. STORMWATER MANAGEMENT FACILITIES located within or affecting the FLOODPLAIN or any WATERCOURSE shall also be subject to the requirements of The Floodplain Ordinance of Manheim Township, The Zoning Ordinance of Manheim Township, and any ordinance which regulates CONSTRUCTION and DEVELOPMENT within AREAS of the TOWNSHIP subject to FLOODING, and any other applicable requirements of the FLOODPLAIN MANAGEMENT ACT.

7. RIPARIAN BUFFER and RIPARIAN FOREST BUFFER delineation.

- A. In order to protect and improve water quality, a RIPARIAN BUFFER or RIPARIAN FOREST BUFFER shall be delineated on the plan and protected by an easement. The RIPARIAN BUFFER EASEMENT or RIPARIAN FOREST BUFFER EASEMENT shall be recorded as part of any subdivision or land DEVELOPMENT or STORMWATER MANAGEMENT PLAN that encompasses a RIPARIAN BUFFER or RIPARIAN FOREST BUFFER.
- B. Except as otherwise required by 25 Pa. Code CHAPTER 102, the RIPARIAN BUFFER EASEMENT or RIPARIAN FOREST BUFFER EASEMENT shall be measured to be the greater of the limit of the ONE-HUNDRED (100) YEAR FLOODPLAIN or fifty (50) feet from the TOP OF STREAMBANK (on each side).
- C. Minimum Management Requirements for RIPARIAN BUFFERS.
 - (1) Existing NATIVE VEGETATION shall be protected and maintained within the RIPARIAN BUFFER EASEMENT and RIPARIAN FOREST BUFFER EASEMENT.
 - (2) INVASIVE VEGETATION shall be actively removed and the RIPARIAN BUFFER and RIPARIAN FOREST BUFFER shall be planted with native trees, shrubs and other vegetation to create a diverse native plant community appropriate to the intended ecological context of the site.
- D. The RIPARIAN BUFFER EASEMENT or RIPARIAN FOREST BUFFER EASEMENT shall be enforceable by the TOWNSHIP and shall be recorded in the Lancaster County Recorder of Deeds Office, so that it shall run with the land and shall limit the use of the property located therein.
- E. Any permitted use within the RIPARIAN BUFFER EASEMENT or RIPARIAN FOREST 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 and shall comply the requirements of The Floodplain Ordinance of Manheim Township and The Zoning Ordinance of Manheim Township.

- F. The following conditions shall apply when public or private non-motorized recreation trails are permitted within RIPARIAN BUFFERS and RIPARIAN FOREST BUFFERS:
 - (1) Trails shall be designed to have the least impact on native plant species and other sensitive environmental features.
- G. Septic drainfields and sewage disposal systems shall not be permitted within the RIPARIAN BUFFER EASEMENT or RIPARIAN FOREST BUFFER EASEMENT and shall comply with setback requirements established under 25 Pa. Code Chapter 73.

8. Design Standards - EROSION and SEDIMENT Control.

- A. All EARTH DISTURBANCE ACTIVITIES shall be conducted in such a way as to minimize ACCELERATED EROSION and resulting SEDIMENTATION. Measures to control EROSION and SEDIMENTATION shall, at a minimum, meet the standards of the CONSERVATION DISTRICT and 25 Pa. Code CHAPTER 102.
- B. The PADEP has regulations that require an EROSION AND SEDIMENT CONTROL PLAN for any EARTH DISTURBANCE ACTIVITY of 5,000 square feet or more, under 25 Pa. Code § 102.4(b).
- C. In addition, under 25 Pa. Code Chapter 92, a PADEP "NPDES CONSTRUCTION Activities" permit is required for any REGULATED EARTH DISTURBANCE ACTIVITY. This includes earth disturbance on any portion of, part of, or during and stage of, a larger plan of DEVELOPMENT.
- D. The EROSION AND SEDIMENTATION CONTROL PLAN and any required permit, as required by PADEP regulations, must be available at all times at the PROJECT SITE. When required, a permit allowing EARTH DISTURBANCE ACTIVITIES shall be obtained by the APPLICANT before any CONSTRUCTION on the PROJECT SITE shall begin.
- E. The EROSION AND SEDIMENTATION CONTROL PLAN shall be submitted by the APPLICANT to the CONSERVATION DISTRICT for their review and approval. No REGULATED EARTH DISTURBANCE ACTIVITIES within the TOWNSHIP shall commence until the EROSION AND SEDIMENTATION CONTROL PLAN is reviewed and approved by the CONSERVATION DISTRICT.
- F. EROSION and SEDIMENTATION Controls are to be designed and maintained throughout the construction phase of the PROJECT SITE, as specified in Section 302.5.C.
- G. Evidence of any necessary permit(s) for any REGULATED EARTH DISTURBANCE ACTIVITIES from the appropriate PADEP regional office or the CONSERVATION DISTRICT must be provided to the TOWNSHIP.