

**PENN TOWNSHIP REVIEW CHECKLIST
GENERAL REQUIREMENTS FOR STORMWATER MANAGEMENT**

Name of Project: _____ Date Project Received by EADS: _____ Developer's Contact Person: _____
 Project Plans Reviewed by: _____ Date of Review: _____ Review Acknowledged: _____ Date Acknowledged: _____ Developer's Email Address: _____

Code Section	Code Requirement	Plans Meet Code	Plans Do Not Meet Code	Other	Comments, if any	Sheet/s on which Requirement is Met	Developer's Comments, if any
144-11	General requirements for stormwater management.						
144-11 A	All regulated earth disturbance activities within the Township shall be designed, implemented, operated, and maintained to meet the purposes of this chapter through these two elements:						
144-11 A(1)	Erosion and sediment control during the earth disturbance activities (e.g., during construction); and						
144-11 A(2)	Water quality protection measures after completion of earth disturbance activities (e.g. after construction), including operations and maintenance.						
144-11 B	No regulated earth disturbance activities within the Township shall commence until the requirements of this chapter are met.						
144-11 C	Erosion and sediment control during regulated earth disturbance activities shall be addressed as required by §144-17.						
144-11 D	Postconstruction water quality protection shall be addressed as required by §144-18. Operations and maintenance of permanent stormwater BMP's shall be addressed as required by Article IV.						
144-11 E	All best management practices (BMP's) used to meet the requirements of this chapter shall conform to the state water quality requirements and any more stringent requirements as determined by the Township.						

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144-11 F	Techniques described in Appendix A (Low Impact Development) of this chapter are encouraged, because they reduce the costs of complying with the requirements of this chapter and the state water quality requirements.						
144-11 G	General performance standards. The following provisions shall be considered the overriding performance standards against which all proposed stormwater control measures shall be evaluated and shall apply throughout the Township of Penn.						
144-11 G(1)	Any landowner and any person engaged in the alteration or development of land which may affect stormwater runoff characteristics shall implement such measures as are reasonably necessary to prevent injury to health, safety, or other property. Such measures shall include such actions as are required:						
144-11 G(1)(a)	To assure that the maximum rate of stormwater runoff is no greater after development than prior to development activities; or						
144-11 G(1)(b)	To manage the quantity, velocity, and direction of resulting stormwater runoff in a manner which otherwise adequately protects health and property from possible injury.						
144-11 G(2)	The stormwater management plan for the development site must consider all the stormwater runoff flowing over the site.						
144-11 G(3)	No discharge of toxic materials shall be permitted into any stormwater management system.						
144-11 H	Turtle Creek Stormwater Management District watershed performance standards shall apply to all districts.						

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144-11 H(1)	The stormwater performance standards contained in this section are intended to implement the standards and criteria contained in the Turtle Creek Stormwater Management Plan, adopted and approved in accordance with the Pennsylvania Storm Water Management Act. If there is any discrepancy between the provisions of this section and the standards and criteria of the plan or if the watershed plan is subsequently amended, then the standards/criteria of the current watershed plan shall govern.																
144-11 H(2)	<p>Storm frequencies. Stormwater management facilities on all development sites shall control the peak stormwater discharge for the two-, ten-, twenty-five-, and one-hundred-year storm frequencies. The SCS twenty-four-hour, Type II rainfall distribution shall be used for analyzing stormwater runoff for both pre- and post-development conditions. The twenty-four-hour total rainfalls for these storm frequencies in the watershed are:</p> <table border="1"> <thead> <tr> <th>Storm Frequency</th> <th>Rainfall Depth (inches)</th> </tr> </thead> <tbody> <tr> <td>2-year</td> <td>2.50</td> </tr> <tr> <td>10-year</td> <td>3.61</td> </tr> <tr> <td>25-year</td> <td>4.31</td> </tr> <tr> <td>100-year</td> <td>5.71</td> </tr> </tbody> </table> <p>NOTE: For additional information or data on other storm return periods, consult the Rainfall Duration Frequency Tables for Pennsylvania, produced by Pennsylvania DEP, Office of Resource Management, Bureau of Dams and Waterways Management, Division of Stormwater Management, Harrisburg, February 1983.</p>	Storm Frequency	Rainfall Depth (inches)	2-year	2.50	10-year	3.61	25-year	4.31	100-year	5.71						
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2-year	2.50																
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144-11 H(3)	Calculation methods.																

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144-11 H(3)(a)	Development sites. For the purpose of computing peak flow rates and runoff hydrographs from development sites, calculations shall be performed using one of the following: SCS publications, Technical Release (TR) 55 or 20, HEC I or Penn State Runoff Model.						
144-11 H(3)(b)	Where detention facilities will be utilized, multiple use facilities, such as wetlands, lakes, ball fields, or similar recreational open space uses, are encouraged wherever feasible, subject to the approval of the Township and Pennsylvania DEP's Chapter 105 regulations.						
144-11 H(3)(c)	Predevelopment conditions. Predevelopment conditions shall be assumed to be those which exist on any site at the time of adoption of the Turtle Creek Stormwater Management Plan. Hydrologic conditions for all areas with pervious cover (i.e., fields, woods, lawn areas, pastures, cropland, etc.) shall be assumed to be in good condition, and the lowest recommended SCS runoff curve number (CN) shall be applied for all pervious land uses within the respective range for each land use and hydrologic soil group.						
144-11 H(3)(d)	The routing of hydrographs through detention/retention facilities for the purpose of designing those facilities shall be accomplished using the Modified-Puls Method or a recognized reservoir routing method, subject to the approval of Penn Township or the Township's representative.						

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144-11 H(4)	Release rate percentage.						
144-11 H(4)(a)	Definition. The release rate percentage defines the percentage of the predevelopment peak rate of runoff that can be discharged from an outfall on the site after development. It applies uniformly to all land development.						
144-11 H(4)(b)	Procedure for use.						
144-11 H(4)(b)[1]	Compute the pre- and post-development runoff hydrographs for each stormwater outfall on the development site using an acceptable calculation method for the two-, ten-, twenty-five-, and one-hundred-year storms. Apply no on-site detention for stormwater management, but include any techniques to minimize impervious surfaces and/or increase the time of concentration for stormwater runoff flowing from the development site. If the post-development peak runoff rate and the runoff volume are less than or equal to the pre-development peak runoff rate and volume, then additional stormwater control shall not be required at that outfall. If the post-development peak runoff rate and volume are greater than the pre-development peak runoff rate and volume, then stormwater detention will be required and the capacity of the detention facility must be calculated in the manner prescribed below.						
144-11 H(4)(b)[2]	Multiply the fifty-percent release rate percentage by the pre-development rate of runoff from the development site to determine the maximum allowable release rate from any detention facility for the four prescribed storm events.						

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144-11 H(4)(b)[3]	Design the outlet control facilities and size the volume of the detention facility using the calculated post-development hydrograph and accepted hydrograph routing procedures in consideration of the maximum allowable release rate.						
144-11 H(5)	No harm evaluation.						
144-11 H(5)(a)	An applicant may seek to exceed the otherwise applicable subarea release rate percentage by performing the no harm evaluation. This evaluation requires an independent engineering analysis to demonstrate that other reasonable options exist to prevent the occurrence of increased stormwater runoff discharge rate and/or velocities or that measures can be provided to prevent increased stormwater discharge rates and/or velocities from increasing flood elevations and accelerating erosion at all downstream points in the watershed.						
144-11 H(5)(b)	A no harm evaluation will be considered only in instances where the discharge to a stream channel from the development occurs directly to the Monongahela River, the channelized portion of Turtle Creek, or through a properly sized and designed stormwater detention facility.						
144-11 H(5)(c)	The analysis for the no harm evaluation shall be submitted to the Municipal Engineer and Westmoreland Conservation District for review and approval.						

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144-11 H(5)(d)	The no harm evaluation shall be prepared by a registered engineer who is experienced in hydrology and hydraulics. The no harm evaluation shall be completed using the following procedure. The Penn State Runoff Model (PSRM) is the hydrologic model required in this procedure. Use of this model would produce results from a no harm evaluation analysis that could be compared to the results of the watershed study.						
144-11 H(5)(d)[1]	Develop the runoff hydrograph(s) for the design storms of the site and areas tributary to it using the PSRM and the Turtle Creek Watershed Stormwater Management Plan land use of the development for both pre-development and post-development conditions.						
144-11 H(5)(d)[2]	Develop the runoff hydrograph(s) for the proposed site using the PSRM. If no management or controls are proposed, this would be equivalent to the runoff hydrograph under post-development conditions. If some management controls are proposed, then the runoff hydrograph under post-development conditions would be modified to reflect their effect on the rate, volume, and timing of discharges.						
144-11 H(5)(d)[3]	Subtract the runoff hydrograph ordinates under pre-development conditions (Subsection H(5)(d)[1]) from the discharge hydrograph (Subsection H(5)(d)[2]) maintaining the time scales of both hydrographs for one-to-one correspondence.						
144-11 H(5)(d)[4]	Obtain the PSRM for existing conditions for the Turtle Creek Watershed from the county.						

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144-11 H(5)(d)[5]	Locate the subbasin(s) in which the proposed development is located and into which the discharge hydrograph enters. If more than one subbasin receives this incremental flow, divide the flow accordingly.						
144-11 H(5)(d)[6]	Add the incremental increase computed in Subsection H(5)(d)[3] to the runoff hydrograph for the subbasin(s) identified in Subsection H(5)(d)[5].						
144-11 H(5)(d)[7]	Route the adjusted runoff hydrograph through the Turtle Creek Watershed PSRM and note any increase in peak flows which would occur in downstream subbasins. If no increase is noted, then the no harm has been demonstrated. If no increase is observed in peak flows, the increased potential for erosion and/or sedimentation in downstream channels resulting from any change in the flood hydrograph predicted by the model shall be evaluated. If no increased potential can be demonstrated by appropriate technical means, then the no harm exemption may be requested.						
144-11 H(5)(d)[8]	If an increase in peak flow is observed in any of the downstream subbasins or increased potential for erosion and/or sedimentation is indicated, the no harm exemption shall not be granted.						
Reviewer's Additional Comments, Questions, or Concerns							