

CHAPTER 22

SUBDIVISION AND LAND DEVELOPMENT

Part 1

Purpose, Authority, Title and Jurisdiction

- §101. Purpose
- §102. Authority and Title
- §103. Jurisdiction

Part 2

Submission Procedures

- §201. General
- §202. Sketch Plan Submission
- §203. Sketch Plan
- §204. Submission of Preliminary Plan
- §205. Review of Preliminary Plan
- §206. Submission of Final Plan
- §207. Review of Final Plan by Planning Commission
- §208. Recording of Final Plan
- §209. Plans Exempted from Standard Procedures

Part 3

Plan Requirements

- §301. Sketch Plan
- §302. Preliminary Plan
- §303. Final Plans

Part 4

Design Standards

- §401. Application
- §402. General Standards
- §403. Block and Lot Design Standards
- §404. Street Design Standards
- §405. Sanitary Sewage Disposal
- §406. Water Supply and Distribution Systems
- §407. Storm Drainage Systems
- §408. Underground Utilities and Utility Easements
- §409. Environmental Protection and Open Space Preservation

Part 5
Improvement Specifications

- §501. General Requirements
- §502. Required Improvements
- §503. Improvements Guarantee Procedure
- §504. Approval of Improvements and Release of Performance Guarantee by Borough Council, Public Utility or Municipal Authority

Part 6
Administration

- §601. Amendments
- §602. Appeals
- §603. Preventive Remedies
- §604. Enforcement Remedies
- §605. Validity and Conflicts
- §606. Fees

Part 7
Definitions

- §701. General Terms
- §702. Specific Terms

Appendix A
Design and Construction Standards for
Centralized Water Systems

- §A-1. General Requirements
- §A-2. Water Supply
- §A-3. Distribution Systems
- §A-4. Water Storage and Pumping Stations
- §A-5. Well Construction and Location
- §A-6. Well Capacity Testing Procedures
- §A-7. Improvements Requirements

Appendix B
Storm Drainage Runoff Calculations

- §B-1. Rational Formula
- §B-2. Channel Capacity
- §B-3. Maximum Stream Velocities in Open Channels

Appendix C
Bushkill Creek Watershed Storm Water Management Plan

- §C-1. General Provisions
- §C-2. Definitions
- §C-3. Storm Water Management Requirements
- §C-4. Drainage Plan Requirements
- §C-5. Inspections
- §C-6. Fees and Expenses
- §C-7. Stormwater BMP Operations and Maintenance Plan Requirements
- §C-8. Prohibitions
- §C-9. Right of Entry, Notification and Enforcement

Appendix C-A
Map of Bushkill Creek Watershed

Appendix C-B

- §C-B-1 NRCS Type II 24-hour Rainfall Distribution (Graphic & Tabular)
- §C-B-2 Intensity-Duration-Frequency Curves
- §C-B-3 Runoff Curve Numbers and Percent Imperviousness Values
- §C-B-4 Runoff Coefficients for the Rational Method
- §C-B-5 Manning 'n' Values

Appendix C-C
Recommendation Chart for Infiltration Stormwater
Management BMPs in Carbonate Bedrock

Appendix C-D
Stormwater Best Management Practices
Operations and Maintenance Agreement

Appendix C-E
Low Impact Development Practices

Appendix C-F
Preliminary Site Investigation and Testing Requirements

Appendix D
Monocacy Creek Watershed Storm Water Management Plan

- §D-1. General Provisions
- §D-2. Definitions
- §D-3. Storm Water Management Requirements
- §D-4. Drainage Plan Requirements
- §D-5. Inspections
- §D-6. Fees and Expenses

- §D-7. Stormwater BMP Operations and Maintenance Plan Requirements
- §D-8. Prohibitions
- §D-9. Right of Entry, Notification and Enforcement

Appendix D-A

- §D-A-1 Municipal Map of Storm Water Release Rates
- §D-A-2 Release Rate Summary Table

Appendix D-B

- §D-B-1 Map of Storm Drainage Problem Areas
- §D-B-2 Description of Storm Drainage Problem Areas

Appendix D-C

- §D-C-1 NRCS Type II 24-Hour Rainfall Distribution (Graphic and Tabular)
- §D-C-2 Precipitation Intensity and Depth Charts
- §D-C-3 Runoff Curve Numbers and Percent Imperviousness Values
- §D-C-4 Runoff Coefficients for the Rational method
- §D-C-5 Manning 'n' Values
- §D-C-6 Percent Direct Recharge per Fraction impervious versus Storage Curve
- §D-C-7 Percent Direct Recharge per Fraction Impervious versus Storage Curve Usage Instructions
- §D-C-8 Percent Annual Rainfall versus Vegetated/Surface BMP Design Runoff Chart

Appendix D-D

Recommendation Chart for Infiltration Stormwater Management BMPs in Carbonate Bedrock

Appendix D-E

Storm Water Best Management Practices Operations and Maintenance Agreement

Appendix D-F

Low Impact Development Practices

Appendix D-G

Preliminary Site Investigation and Testing Requirements

Appendix D-H

List of Acceptable BMPs

Part 1

Purpose, Authority, Title and Jurisdiction

§101. Purpose. The purpose of this Chapter is to regulate subdivision and land development within the Borough of Nazareth, Northampton County, Pennsylvania. (Ord. 577, 10/2/1989, §100)

§102. Authority and Title. This Chapter is enacted pursuant to the Pennsylvania Municipalities Planning Code and may be cited as the "Nazareth Borough Subdivision and Land Development Ordinance of 1989." (Ord. 577, 10/2/1989, §110)

§103. Jurisdiction. This Chapter shall apply in the following circumstances:

A. To all subdivision and land development plans submitted after the effective date of this Chapter.

B. To all subdivision and land development plans, previously approved in accordance with any law or regulation then applicable, the development of which has not been completed in accordance with the terms of such approval within three (3) years of such approval.
(Ord. 577, 10/2/1989, §120)

Part 2

Submission Procedures

§201. General.

1. Sketch Plan. Review materials shall be submitted to the designated municipal official (D.M.O.) for discussion with the Planning Commission as to the suitability of a parcel of land for a specific subdivision or land development use and for direction or advice from the Planning Commission. The sketch plan materials shall be submitted to the Borough Engineer and the Joint Planning Commission for review.

2. Preliminary Plan. Plans, supplementary data, and fees shall be submitted to the D.M.O. for distribution to various review bodies. All reviews shall be submitted to the Planning Commission, which shall take action and advise the applicant in writing of their decision.

3. Final Plan. Plans, supplementary data, and fees shall be submitted to the D.M.O. for distribution to various review bodies. The final plan shall be submitted within one (1) year of preliminary plan approval. All reviews shall be submitted to the Planning Commission, which shall take action on the plan and advise the applicant in writing of their decision. As a condition of approval, the applicant shall enter into improvement and maintenance agreements with the Borough. As a condition of approval, the applicant shall pay all fees and costs as required by resolution of Council. No permits shall be issued until said agreements have been executed and secured to the satisfaction of the Borough Solicitor and until the approved final plan has been recorded in the County Recorder of Deeds Office by the Borough Engineer.

(Ord. 577, 10/2/1989, §200)

§202. Sketch Plan Submission.

1. Sketch Plan maps and materials shall be submitted for all proposed subdivisions and land developments, for purposes of discussion between the Planning Commission and the developer, and for the review of the Joint Planning Commission of Lehigh-Northampton Counties.

2. Ten (10) copies of all sketch plan maps and materials as set forth in §301, shall be submitted to the D.M.O.

3. The D.M.O. shall refer five (5) copies of sketch plan maps and materials to the Planning Commission for its review and recommendations.

4. The D.M.O. shall refer one (1) copy of the sketch plan maps and materials to the Borough Engineer for review and recommendations except for plans exempted from standard procedure.

5. The D.M.O. shall refer one (1) copy of sketch plan maps and materials to the Joint Planning Commissions for review and recommendations.

(Ord. 577, 10/2/1989, §210)

§203. Sketch Plan.

1. When sketch plan maps and materials have been submitted to the Planning Commission, the data presented will be reviewed by that body at its next regular meeting, provided that submission has occurred no less than twenty-one (21) days prior to such scheduled meeting. [Ord. 595]

2. The Planning Commission shall review the sketch plan data to determine the development potential of the site, as indicated by the natural features analysis presented. The general development

concepts of the developer will be reviewed to determine their compatibility with the development potential of the site and with relevant plans and ordinances. Also, the sketch plan stage is designed to offer the developer an opportunity to informally discuss his plans for the proposed subdivision or land development with the Planning Commission.

3. No recommendations shall be made by the Planning Commission until the Commission has received and considered the written report of the Joint Planning Commission of Lehigh-Northampton Counties or until thirty (30) days have passed from the date that the plans were forwarded to the JPC.

4. Within sixty (60) days of submission of sketch plan maps and materials to the Planning Commission, the Commission shall make any recommendations to the developer which it deems necessary or advisable in the public interest in order to provide an acceptable subdivision or land development plan for the site. Within fifteen (15) days after such meeting, the Borough Engineer shall send written notice of the Commission's recommendations to the developer or his representative.

5. Within six (6) months after completion of the sketch plan by the Planning Commission, the developer shall submit a preliminary plan.

(Ord. 577, 10/2/1989, §220; as amended by Ord. 595, 10/7/1991)

§204. Submission of the Preliminary Plan.

1. Preliminary plans and all required supplementary data for all proposed subdivisions and land developments shall be submitted to the D.M.O.

2. If the preliminary plan submission complies with §302 of this Part, the D.M.O. shall accept the preliminary plan for distribution to the various review bodies.

3. Official submission of a preliminary plan to the D.M.O. by a developer shall comprise:

A. Three (3) copies of a completed Application for Review of Preliminary Subdivision Plans.

B. Submission of ten (10) black-on-white or blue-on-white prints on paper of the preliminary plan, which shall fully comply, with the provisions of this Chapter as set forth in §302.

C. Submission of three (3) copies of all required supplemental information as set forth in §302(6).

4. The D.M.O. shall refer preliminary plan submission materials to the various review bodies as follows:

A. One (1) application, five (5) plan prints, and one (1) copy of the supplemental information to the Planning Commission.

B. One (1) application, one (1) plan print, and one (1) copy of the supplemental information to the Borough Engineer.

C. One (1) plan print, and one (1) copy of the §302(6)(A) supplemental information to the Municipal Authority.

D. One (1) application and one (1) plan print to the Joint Planning Commission of Lehigh-Northampton Counties.

5. Additional copies of the preliminary plan materials shall be referred by the D.M.O. to the respective agencies in the following circumstances:

A. Whenever the property being subdivided or developed abuts a State Legislative Route, one (1) application and one (1) plan print shall be submitted to the Pennsylvania Department of Transportation District Office.

B. Whenever a proposed subdivision or land development is located adjacent to another municipality, one (1) application and one (1) plan print shall be referred to that municipality.

(Ord. 577, 10/2/1989, §230)

§205. Review of Preliminary Plan.

1. By the Planning Commission.

A. When a preliminary plan has been officially submitted, such plan shall be placed on the agenda of the Planning Commission for review at its next regular monthly meeting, provided that such official submission has occurred no less than twenty-one (21) calendar days prior to such regular meeting. The Planning Commission may hold a public hearing on the preliminary plan at this time. [Ord. 595]

B. The Planning Commission shall review the preliminary plan to determine its conformance with the standards contained in this Chapter and other applicable municipal ordinances, and shall require or recommend such changes and modifications, as it deems necessary.

C. No action shall be taken by the Planning Commission with respect to a preliminary plan until the Planning Commission has received and considered the written report of the Joint Planning Commission; provided, however, that if the Joint Planning Commission shall fail to report thereon within thirty (30) days after receipt of a preliminary plan, then the Planning Commission may officially act without having received and considered such report.

D. Within ninety (90) days following the date of the regular meeting of the Planning Commission next following the date of the application (unless the next meeting does not fall in a thirty (30) day period following the date of the application in which case the ninety (90) day period commences on the thirtieth day following the date of the application), the Planning Commission shall, in accordance with the provisions of relevant ordinances, take action by approving, conditionally approving or disapproving the preliminary plan and document the findings upon which that action is based, in writing to: (however, in no case shall the decision be communicated to the applicant in more than fifteen (15) days from the date that the decision has been made).

(1) The D.M.O.

(2) The Borough Engineer.

(3) The Municipal Authority.

(Ord. 577, 10/2/1989, §240; as amended by Ord. 595, 10/7/1991)

§206. Submission of the Final Plan.

1. Within twelve (12) months after approval of the preliminary plan, a final subdivision or land development plan and all required supplemental data shall be submitted to the D.M.O. The Planning Commission upon written request may grant an extension of time. Otherwise, the plan submitted may be considered as a new preliminary plan.

2. The final plan shall conform in all significant respects to the preliminary plan as previously approved by the Commission and shall incorporate all modifications required by the Planning Commission in its preliminary plan approval. The Planning Commission may, however, accept a final plan modified so as to reflect any substantial changes, which have occurred on the site of the proposed subdivision, or in its surroundings, since the time of preliminary plan review.

3. The final plan may be submitted in sections or stages, each covering: a reasonable portion of the entire proposed subdivision as shown on the reviewed preliminary plan, in accordance with the regulations set forth in §303. In the case of the final subdivision or land development plan which is to be submitted in sections or stages over a period of years, the time between submission of application for final approval of each stage or section shall be no greater than twelve (12) months.

4. Final plans and all required supplementary data set forth in §303 for all proposed subdivisions and land developments shall be submitted to the D.M.O.

5. Official submission of a final plan to the D.M.O. by a developer shall comprise:

A. Three (3) copies of a completed Application for Review of Final Subdivision Plan.

B. Submission of ten (10) black-on-white or blue-on-white prints on paper of the final plan, which shall fully comply, with the provisions of this Chapter as set forth in §303.

C. Submission of three (3) copies of all required supplemental information as set forth in §303.

6. The D.M.O. shall refer final plan submission materials to the various review bodies as follows:

A. One (1) application, five (5) plan prints, and one (1) copy of the supplemental information to the Planning Commission.

B. One (1) application, one (1) plan print, and one (1) copy of the supplemental information to the Borough Engineer.

C. One (1) plan print, and one (1) copy of the §302(6)(A) supplemental information to the Municipal Authority.

D. One (1) plan print to the Joint Planning Commission of Lehigh-Northampton Counties.

7. Additional copies of the final plan materials shall be referred by the D.M.O. to the respective agencies in the following circumstances:

A. Whenever the property being subdivided or developed abuts a State Legislative Route, and the plan differs from plans previously submitted to PENNDOT with reference to access points, proposed external road improvements, or traffic impact, one (1) application and one (1) plan print shall be submitted to the Pennsylvania Department of Transportation District Office.

B. Whenever the subdivision or land development requires a soil erosion and sedimentation control plan, as described in §409(1) of this Chapter, one (1) application, one (1) plan print, and one (1) copy of supplemental information shall be submitted to the County Conservation District.

C. Whenever a proposed subdivision or land development is located adjacent to another municipality, one (1) application and one (1) plan print shall be referred to that municipality.

(Ord. 577, 10/2/1989, §250)

§207. Review of Final Plan By the Planning Commission.

1. When a final plan has been officially submitted, such plan shall be placed on the agenda of the Planning Commission for review at its next regular monthly meeting, provided that such official submission has occurred no less than twenty-one (21) calendar days prior to such regular meeting. The Planning Commission may hold a public hearing on the final plan at this time. [Ord. 595]

2. The Planning Commission shall review the final plan to determine its conformance with the standards contained in this Chapter and other applicable municipal ordinances and shall require or recommend such changes and modifications, as it deems necessary.

3. No action shall be taken by the Planning Commission with respect to a final plan until the Planning Commission has received and considered the written report of the Joint Planning Commission or until thirty (30) days have passed from the date that the plans were forwarded to the JPC.

4. Within ninety (90) days following the date of the regular meeting of the Planning Commission next following the date of the application (unless the next meeting does not fall in a thirty (30) day period following the date of the application in which case the ninety (90) day period commences on the thirtieth day following the date of the application), the Planning Commission shall, in accordance with the provisions of relevant ordinances, take action by approving, conditionally approving or disapproving the final plan and document the findings upon which that action is based, in writing to: (however, in no case shall the decision be communicated to the applicant in more than fifteen (15) days from the date that the decision has been made)

- A. The developer or his representative.
- B. The D.M.O.
- C. The Borough Engineer.
- D. The Municipal Authority.

5. The action of the Planning Commission shall be noted, together with the date of action and signatures of its Chairman and Secretary, on the record plan.

(Ord. 577, 10/2/1989, §260; as amended by Ord. 595, 10/7/1991)

§208. Recording of Final Plan.

1. After completion of the procedures set forth in §503 and after the Planning Commission approves the final plan, six (6) copies of the final plan shall be endorsed by the Planning Commission. The signature of the JPC shall also be placed on the plans indicating JPC review of the plans.

2. The record plan shall be on Mylar film, or other medium designated by the Recorder of Deeds in and for Northampton County, and shall be legible, suitable for microfilming, and sized according to standard engineering survey practices.

3. After endorsement by the Planning Commission and the Joint Planning Commission, the Borough Engineer shall file the record plan with the County Recorder of Deeds within ninety (90) days of the date of final approval by the Planning Commission.

4. At the time the record plan is signed by the Joint Planning Commission, the Joint Planning Commission shall receive one (1) endorsed black-on-white or blue-on-white print of the final plan as approved by the Planning Commission.

(Ord. 577, 10/2/1989, §270)

§209. Plans Exempted From Standard Procedures.

1. In the case of any proposed residential subdivision which does not, and will not in the future, involve more than a total of two (2) lots and does not involve the provision of any new street or easement for access (i.e. one in which all proposed lots will have frontage on an existing public street), the following procedure shall be followed:

A. The applicant shall prepare and submit a sketch plan in accordance with the requirements of §301 of this Chapter.

B. The sketch plan will be processed according to the provisions of §§202 and 203 of this Chapter.

C. Within one (1) year of the completion of the sketch plan by the Planning Commission, the applicant shall submit a final plan in accordance with the requirements of §303 of this Chapter. The Planning Commission, upon written request, may grant an extension of time. Otherwise, the plan submitted may be considered as a sketch plan.

D. The final plan submission shall be processed according to the provisions of §§206 and 207.

E. If the plan receives final approval, the provisions of §208 shall apply.
(Ord. 577, 10/2/1989, §280)

Part 3

Plan Requirements

§301. Sketch Plan. Before submission of the preliminary plan by the developer, maps and materials shall be submitted by the developer to the Planning Commission. This material will enable the Planning Commission to determine the potential for the proposed subdivision or land development tract for development and the general feasibility of the developer's plans for the tract. The sketch plan submission will include the following maps and materials:

A. A key map, for the purpose of locating the property being subdivided, drawn at a scale not smaller than one (1) inch equals four hundred (400) feet and showing the relation of the property, differentiated by tone or pattern, to adjoining property and to all streets, roads, and municipal boundaries existing within one thousand (1,000) feet of any part of the property. The key map shall be based on the official Borough Map.

B. A map illustrating an analysis of natural drainage patterns and water resources within the proposed subdivision tract, including delineation of streams, natural drainage swales, ponds and lakes, wetlands, floodplains subject to a one hundred (100) year flood frequency, storm sewers, and permanent and seasonal high water table areas. The map shall be based on USGS quad sheets, County Soil Survey Maps, and the flood boundary and floodway map from the Municipal Flood Insurance Study, when available.

C. A map illustrating an analysis of types of soils present within the proposed subdivision tract.

D. A topographic map of the site based on USGS quad sheets.

E. A map delineating additional significant physical features within the proposed subdivision tract, such as woodland area, large trees, rock outcroppings and scenic views. The map shall be based on USGS quad sheets and on-site survey work.

F. Where feasible and legible, the analysis involved in §§301(A) through 301(E) may be illustrated on one (1) or a combination of composite maps. The combined impact of the natural characteristics upon the development potential of the tract shall be clearly illustrated on the map or maps.

G. A letter of intent and a sketch of the proposed subdivision or land development tract, at a scale not less than one (1) inch equals fifty (50) feet, explaining and illustrating the developer's general development concepts for the tract. The type of development density of development, form of ownership, circulation patterns, and means of providing major utility service should be explained and illustrated. The sketch may be based on deed and tax map information.

(Ord. 577, 10/2/1989, §300)

§302. Preliminary Plan.

1. The preliminary plan of a proposed subdivision shall be clearly and legibly drawn to a scale not less than one (1) inch equals fifty (50) feet.

2. The original drawing and all submitted prints shall be made on sheets of one (1) of the following sets of dimensions:

A. Eighteen (18) inches by twenty-four (24) inches.

B. Twenty-four (24) inches by thirty-six (36) inches.

C. Thirty (30) inches by forty-two (42) inches.

3. If the preliminary plan requires more than one (1) sheet, a key diagram illustrating relative location of the several sections shall be drawn on each sheet.

4. The preliminary plan shall indicate the following data:

A. Name and address of record owner.

B. Name of developer if different from owner.

C. Name of the proposed subdivision.

D. Name of the municipality or municipalities within which subdivision is proposed.

E. Names of all adjoining subdivisions, if any, and the names of owners of all adjacent unplotted land.

F. Name, address, license number, certification, and seal of registered engineer or surveyor responsible for the subdivision plan.

G. North point, graphic scale, written scale, and date including the month, day and year that the original drawing was completed, and the month, day and year that the original drawing was revised, for each revision.

H. A key map, for the purpose of locating the property being subdivided, drawn at a scale not smaller than one (1) inch equals four hundred (400) feet and showing the relation of the property, differentiated by tone or pattern, to adjoining property and to all streets, roads and municipal boundaries, within one thousand (1,000) feet of any part of the property.

I. Total tract boundaries of the property being subdivided, showing bearings and distances, and a statement of total acreage of the property.

J. Tax map sheet, block, and lot numbers within the proposed subdivision tract obtained from the County tax assessor's office.

K. The zoning district or districts within which the proposed subdivision is located and within fifty (50) feet of the boundaries of the proposed subdivision tract.

L. All existing buildings or other structures within the proposed subdivision tract.

M. All existing streets, including streets of record (recorded but not constructed), on or adjoining the tract, including names, right-of-way widths, pavement widths and approximate grades.

N. All existing sewer lines, storm sewers, water lines, fire hydrants, utility transmission lines, culverts, bridges, railroads, or other man-made features within the proposed subdivision tract and within two hundred (200) feet of the boundaries of the proposed subdivision tract.

O. Location, width and purpose of existing easements and utility rights-of-way within two hundred (200) feet of the proposed subdivision tract.

P. Contour lines at vertical intervals of not more than two (2) feet for land with average natural slope of five percent (5%) or less, and at intervals of not more than five (5) feet for land with average natural

slope exceeding five percent (5%). Location and elevation of the date to which contour elevations refer shall be the closest United States Geologic Survey established benchmark, where available.

5. The full plan of proposed development, including:

A. Location and width of all streets and rights-of-way, with a statement of any conditions governing their use.

B. Suggested street names.

C. Utility easement locations.

D. Building setback lines along each street.

E. Lot lines with approximate dimensions.

F. A statement of the intended use of all non-residential lots and parcels.

G. Lot numbers, a statement of total number of lots and parcels and the lot size in square feet or acres for each lot.

H. Sanitary and/or storm sewers (and other drainage facilities), with the size and material of each indicated, and any proposed connections with existing facilities.

I. Parks, playgrounds and other areas dedicated or reserved for public or common use, with any conditions governing such use.

J. Location, width and purpose of proposed easements and utility rights-of-way.

K. Copies of the proposed deed restrictions and protective and restrictive covenants referenced to the preliminary plan.

6. The preliminary plan shall be accompanied by the following supplementary data unless the Planning Commission has determined that the submission of such data is not necessary:

A. Preliminary profiles, typical cross-sections and specifications for proposed street, sanitary sewer, water system improvements, and storm drainage in accordance to the design standards of §§404, 405, 406 and 407 respectively.

B. Four (4) copies of the completed planning module for land development, (where applicable) including soil and representative percolation tests and information necessary for the Borough Council to make a decision on revising or supplementing the official plan for sewage facilities.

C. A storm drainage plan for the proposed subdivision tract, which conforms to design requirements for storm drainage, set forth in §407.

D. A landscape plan, where applicable, according to the standards set forth in §409(2)(D), "Tree Preservation and Planting."

E. In the case of subdivision or land development plans to be developed in stages or sections, over a period of time, a map delineating each stage or section of the proposed subdivision or land development consecutively numbered so as to illustrate phasing of development and a schedule indicating the approximate time for which application for final approval of each stage or section are intended to be filed.

F. Preliminary designs of any bridges or culverts, which may be required. Such designs shall meet all applicable requirements of the Pennsylvania Department of Environmental Resources, Division of Dams and Encroachments, and/or the Pennsylvania Department of Transportation.

G. A map illustrating the entire contiguous holdings of the landowner indicating the area or scope of ultimate proposed subdivision and delineating the area, which the preliminary plan encompasses.

H. A sketch map of the proposed road system for the remainder of the area not included in the preliminary plan.

I. When water service to the proposed subdivision is to be provided by an existing public system, the developer shall submit one (1) copy of a letter from the agency, authority or utility which agrees to extend water service, subject to the execution of a service agreement.

J. Certification of Sewage Disposal Systems.

(1) When sewage disposal service to the proposed subdivision is to be provided by an existing public system, the developer shall submit one (1) copy of a letter from the agency, authority or utility which agrees to provide sewer service subject to the execution of a service agreement.

(2) When sewage disposal service for the proposed subdivision is to be by individual on-lot sewage disposal systems, the applicant shall submit four (4) copies of the Borough Sewage Enforcement Officer's approval of the planning module.

K. When an agency, authority or utility providing sewer or water service to the subdivision has approval authority under its own jurisdiction, a letter that indicates that the plans meet the relevant agency, authority, or utility specifications shall be submitted.

L. If the subdivision or land development includes wetlands or hydrologic soils, the applicant shall comply with Sections 9 and 10 of the River and Harbor Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection Research and Sanctuaries Act and with the Pennsylvania Department of Environmental Resources pursuant to the Dam Safety and Encroachments Act.

M. Traffic Impact Study.

(1) A traffic impact study and report shall be required for proposed developments that meet one (1) or more of the following criteria:

(a) Residential: 100 or more dwelling units.

(b) Commercial: A commercial building or buildings consisting of 20,000 square feet or more of total floor area.

(c) Office: A development consisting of 100,000 square feet or more of total floor area.

(d) Industrial: A development consisting of 200,000 square feet or more of total floor area.

(e) Other: A use generating 1,000 or more trips per day as determined by generation rates published by the Institute of Transportation Engineers.

(2) The study will enable the Commission to assess the impact of a proposed development on the traffic system. Its purpose is to ensure that proposed developments do not adversely

affect the traffic network and to identify any traffic problems associated with access from the site onto the existing roads. The study's purpose is also to delineate solutions to potential problems and to present improvements to be incorporated into the proposed development. Traffic impact reports shall be based on the following criteria:

(a) General Site Description. The site description shall include the size, location, proposed land uses, construction, staging and completion date or types of dwelling units. A brief description of other major existing and proposed land developments within one-half (1/2) mile of the proposal which shall constitute the study area.

(b) Traffic Facilities Description. The description shall contain a full documentation of the proposed internal and existing highway system. The report shall describe the external roadway system within the area. Major intersections in the area shall be identified and diagramed. All future highway improvements, which are part of proposed surrounding developments, shall be noted and included in the calculations.

(c) Existing Traffic Conditions. Existing traffic conditions shall be measured and documented for all streets and intersections in the area. Existing traffic volumes for average daily traffic, peak highway hour(s) traffic and peak development-generated hour(s) traffic shall be recorded. Traffic counts at major intersections in the study area shall be included in the report. A volume/capacity analysis based upon existing volumes shall be performed during the peak highway hour(s) and the peak development-generated hour(s) for all streets and major intersections in the study area. Levels of service shall be determined for each major road segment and turning movement. Detailed traffic counts of existing local streets are not required, unless the Commission would so require. A tabulation of accident locations during a recent two (2) year period shall be shown.

(3) This analysis will determine the adequacy of the existing roadway system to serve the current traffic demand. Roadways and/or turning movements experiencing levels of Service D, E or F, as described in "Report 87: Highway Capacity Manual," Highway Research Board 1965, shall be noted as congestion locations.

N. Traffic Impact of the Development. Estimation of vehicular trips to result from the proposal shall be computed from the average daily peak highway hour(s). Vehicular trip generation rates to be used for this calculation shall be obtained from the "Trip Generation Manual," published by the Institute of Transportation Engineers. These development-generated traffic volumes shall be provided for the inbound and outbound traffic movements as estimated, and the reference source(s) and methodology followed shall be documented. All turning movements shall be calculated. These generated volumes shall be distributed to the area and assigned to the existing streets and intersections throughout the area. Documentation of all assumptions used in the distribution and assignment phase shall be provided. Traffic volumes shall be assigned to individual access points. Any characteristics of the site that will cause particular trip generation problems shall be noted.

O. Analysis of Traffic Impact.

(1) The total future traffic demand shall be calculated. This demand shall consist of the combination of the existing traffic expanded to the completion year (straight line projections based on historical data), the development-generated traffic and the traffic generated by other proposed development as anticipated, calculations for each stage of completion shall be made. This analysis shall be performed during this peak highway hour(s) for all roadways and major intersections in the study area. Volume/capacity calculations shall be completed for all major intersections.

(2) All access points shall be examined as to the necessity of installing traffic signals. This evaluation shall compare the projected traffic to State warrant regulations for traffic signal installation.

P. Conclusions and Recommendations. Levels of service for all streets and intersections shall be listed. All streets and/or intersections showing a level of service below C shall be considered deficient, and specific recommendations for the elimination of these problems shall be listed. This listing of recommended improvements shall include, but not be limited to the following elements: internal circulation design, site access location and design, external roadway and intersection design and improvements, traffic signal installation and operation including signal timing. All physical street improvements shall be shown in sketches.

Q. Costs of Needed Project. Approximate costs for all needed transportation improvements shall be developed within a defined impact area.

R. The project manager for any traffic impact report shall be a professional traffic engineer or transportation planner, who should be a member of the Institute for Transportation Engineering.

S. The Commission may combine contributions for traffic impact studies from more than one (1) applicant to accomplish one (1) major coordinated traffic study.

T. Applicant's Responsibilities. The applicant shall respond to the traffic impact report by stating to what degree he/she is willing to assist in funding any off-site improvements that are needed and to state what on-site improvements he/she proposes.

U. Future Stages of Development. The traffic study shall include not only an analysis of one (1) individual project proposed at one (1) point in time, but also the overall projected impacts of future development of all nearby lands owned by the applicant or that the applicant has an option to purchase. The study shall include a projection of the traffic expected from this development, using reasonable alternatives if no definite plans are available.

V. Other Proposed Development. The study should also take in account traffic that can be expected as a result of other development, which has been approved or is being reviewed by the Commission and other development that might reasonably be expected to occur.

(Ord. 577, 10/2/1989, §310)

§303. Final Plans.

1. The final plans shall conform to the standards and data requirements set forth for preliminary plans in §§301(1) through 301(5) of this Chapter.

2. It shall not be necessary to resubmit supporting maps and data submitted with the preliminary plan, as set forth in §302(6) of this Chapter, provided that no change has occurred.

3. The following additional data shall be illustrated on the final plan:

A. The latest source of title to the land as shown by the deed, page number and book of the County Recorder of Deeds.

B. The total tract boundary lines of the area being subdivided with accurate distances to hundredths of a foot and bearings to fifteen (15) seconds. These boundaries shall be determined by accurate survey in the field, to an error of closure not to exceed one (1) foot in ten thousand (10,000) feet. The tract boundary shall be subsequently closed and balanced. The boundary(s) adjoining additional unplatted land of the sub divider (for example, between separately-submitted final plan sections), however, are not required to be based upon field survey, and may be calculated. The location and elevation of all boundary line (perimeter) monuments shall be indicated, along with a statement of the total area of the

property being subdivided. In addition, the engineer or surveyor shall certify to the accuracy of the survey, the drawn plan, and the placement of the monuments.

C. All lot lines shall be completely dimensioned in feet if straight, and by designating length of arc and radius (in feet) and central angle (in degrees, minutes, and seconds) if curved. All internal angles within the lots shall be designated to within fifteen (15) seconds.

D. The proposed building setback or the proposed placement of each building.

E. All easements or rights-of-way where provided for or owned by public services and any limitations on such easements or rights-of-way. Rights-of-way shall be shown and accurately identified on the plan. Easements shall either be shown or specifically described on the plan. Easements should be located in cooperation with the appropriate public utilities.

F. Such private deed restrictions as may be imposed upon the property as a condition to sale, together with a statement of any restrictions previously imposed which may affect the title to the land being subdivided.

G. If the subdivision proposes a new access point to a state legislative route, the highway occupancy permit from PENNDOT shall be attached.

H. A certification of ownership, acknowledgment of plan and offer of dedication shall be lettered on the plan, and shall be duly acknowledged and signed by the owner of the property and notarized.

I. A signature block for certification of approval of the plan by the Planning Commission.

J. A signature block for certification of review of the plan by the Joint Planning Commission.

K. Space shall be left along the lower edge of the sheet, in order that the County Recorder of Deeds may acknowledge receipt and recording of the plan when it is presented.

L. If the final plan requires more than one (1) sheet, a key diagram showing the relative location of the several sections shall be drawn on each sheet.

4. The final plan shall be accompanied by the following:

A. Plans showing:

(1) Location, size, and invert elevation of all sanitary sewer, water distribution and storm drainage systems and the location of all manholes, inlets, and culverts.

(2) Final profiles, cross-sections, and specifications for proposed streets, sanitary sewers, water distribution systems, and storm drainage systems shall each be shown on one (1) or more separate sheets.

B. Documentation from the Borough Sewage Enforcement Officer that each lot has been tested for on-lot sewage systems (where applicable).

C. A copy of the Department of Environmental Resources acceptance or approval of the planning module.

D. A copy of the permit granted by the Pennsylvania Department of Environmental Resources for a private centralized sanitary sewer system, where applicable.

E. A copy of the permit granted by the Nazareth Borough Municipal Authority for a private centralized sanitary sewer system, where applicable.

F. A copy of an agreement document with the governmental authority or public authority, which is to provide the water supply for the public water supply system (where applicable).

G. A copy of a permit granted by Pennsylvania Department of Environmental Resources for a private centralized water system (where applicable).

H. A completed and executed copy of the subdivision improvements agreement as agreed upon by the developer and the Borough Council.

I. A performance guarantee in the amount of one hundred ten percent (110%) of the cost of all required improvements as set forth in §503 as estimated by the Borough Engineer in a form and with surety approved by the Borough Solicitor, guaranteeing the construction and installation of all such improvements within a stated period which shall not be longer than one (1) year from the date on the final subdivision approval. Where the final plan is submitted in stages or sections, the amount of the guarantee may also be provided in stages if acceptable to the Borough Council.

J. A maintenance guarantee in an amount of not less than fifteen percent (15%) of the actual cost of the installation of the improvements as set forth in §503. This guarantee assures the structural integrity of the improvements as well as the functioning of said improvements in accordance with the design and specifications as depicted on the final plat for a period not to exceed eighteen (18) months after acceptance of all such improvements by the Borough Council, public utility, or Municipal Authority.

K. An erosion and sedimentation control plan developed in accordance with Part IV, paragraph 44, of the Soil Erosion and Sedimentation Control Manual issued by the Department of Environmental Resources.

L. A legal description of all areas offered for dedication.

5. In the case of a subdivision or land development proposed to be developed in stages or sections over a period of year, final plan requirements as listed in §§303(1) through 303(4) shall apply only to the stage or section for which final approval is being sought. However, the final plan presented for the stage or section must be considered as it relates to information presented for the entire subdivision or land development in the application for preliminary approval.

(Ord. 577, 10/2/1989, §320)

Part 4

Design Standards

§401. Application.

1. The design standards and requirements outlined in this Part will be utilized by the Planning Commission in determining the adequacy of all plans for proposed subdivisions and land developments.
2. Development shall be planned, reviewed, and carried out in conformance with all municipal, state, and other applicable laws and regulations.

(Ord. 577, 10/2/1989, §400)

§402. General Standards.

1. Land shall be suited to the purpose for which it is to be subdivided. Land with unsafe or hazardous conditions such as open quarries, unconsolidated fill, steep slopes, or flood prone areas shall not be subdivided unless the subdivision plan provides for adequate safeguards, which are approved by the Planning Commission.
2. Consideration shall be given to applicable provisions of the Nazareth Borough Comprehensive Plan and the JPC's Comprehensive Plan for Lehigh and Northampton Counties, emphasizing future school sites, recreation sites, water supply and sewage treatment systems, highway alignments, and other public facilities. However, consideration must be given to the need for the facilities and utilities mentioned above whether or not they are proposed as part of a comprehensive plan.
3. The development of the proposed subdivision shall be coordinated with the adjacent existing development so that the area, as a whole, may develop harmoniously.
4. These design standards and requirements may be altered by the Planning Commission for the purpose of achieving economy and ingenuity in design in accordance with modern and evolving principles of site planning and development upon presentation of evidence that the intent of such standards and requirements shall be substantially achieved.

(Ord. 577, 10/2/1989, §410)

§403. Block and Lot Design Standards.

1. Block Layout. The length, width and shape of blocks shall be determined with due regard to:
 - A. Provisions of adequate sites for buildings of the type proposed.
 - B. Borough zoning requirements.
 - C. Topography.
 - D. Requirements for safe and convenient vehicular and pedestrian circulation, including the reduction of intersections with arterial streets.
2. Block Length.
 - A. Residential blocks shall ordinarily be no less than two hundred fifty (250) feet in length and no more than twelve hundred (1200) feet in length.

B. In the design of blocks longer than eight hundred (800) feet, special consideration shall be given to the requirements of satisfactory fire protection.

3. Block Depth. Single-family residential blocks shall be of sufficient depth to accommodate two (2) tiers of lots, except:

A. Where reverse frontage lots are required; or

B. Where prevented by the size, topographical conditions or other inherent conditions of property, in which case the Planning Commission may approve a single tier of lots.

4. Commercial and Industrial Blocks. Blocks in commercial, industrial and multi-family developments may vary from the elements of design detailed above if required by the nature of the use. In all cases, however, adequate provision shall be made for traffic and pedestrian circulation, off-street parking, and loading areas.

5. General Lot Design Standards.

A. Within the requirements of the Borough Zoning Ordinance [Chapter 27], the size, shape, and orientation of lots shall be appropriate for the type of development and use contemplated.

B. Insofar as practical, side lot lines shall be at right angles to straight street lines or radial to curved street lines.

C. Where feasible, lot lines shall follow Borough boundaries rather than cross them, in order to avoid jurisdictional problems.

D. Generally, the depth of residential lots shall be not less than one (1) or more than two (2) times their width.

E. Depth and width of parcels intended for non-residential uses shall be adequate for the use proposed and sufficient to provide satisfactory space for on-site parking, loading and unloading, setbacks and landscaping.

F. If, after subdividing, there exists remnants of land, they shall be either:

(1) Incorporated in existing or proposed lots; or

(2) Legally dedicated to public use, if acceptable to the Borough Council.

6. Lot Frontage.

A. All lots shall have direct access to an existing or proposed public street or to a private street if it meets the street design requirements of this Chapter.

B. Double or reverse frontage lots may be required to provide separation of residential development from arterial streets or to overcome specific disadvantages of topography or other natural features of the proposed subdivision tract.

7. Lot Access.

A. Residential lots having direct access to a collector street shall be avoided whenever possible. Where direct access to a collector street cannot be avoided, adequate turnaround space shall be provided behind the right-of-way line.

B. Where access is permitted to a State road or highway, authorization from the Pennsylvania Department of Transportation must be proven by the display of a valid highway occupancy permit. Driveways to single family residences shall intersect streets at angles of no less than sixty (60) degrees. All other driveways or access roads shall intersect streets at right angles, where practicable, and in no case less than seventy-five (75) degrees.

C. Widths of access roads or driveways shall be in accordance with the following standards:

(1) Access roads for multi-family residential and all non-residential subdivisions shall be no less than twenty-four (24) feet in width, shall not exceed thirty (30) feet in width at the street line and shall be clearly defined by use of curbing.

(2) Driveways for single-family residential subdivisions shall be no less than ten (10) feet in width but shall not exceed twenty (20) feet in width at the street line and shall be clearly defined by use of curbing.

D. Access road grades or driveway grades shall not exceed the following grades within fifty (50) feet of intersection with the street:

(1) Ten percent (10%) when access is to a collector or local street within fifty (50) feet of intersection with the street.

E. The centerline of an access road or driveway at the point of access to a street shall not be located closer to a street intersection than the following distances:

(1) Fifty (50) feet for single-family residential units.

(2) For multi-family residential developments and all non-residential subdivisions:

(a) One hundred (100) feet if either street is a collector street.

(b) Fifty (50) feet if both streets are local streets.

8. Flag Lots.

A. Flag lots may be allowed in certain circumstances to minimize hardships in the use of land that lacks adequate road frontage for an equitable use of the lot. Normally, this situation will be deemed to exist when the lot lacks double the required road frontage for lots in that Zoning District. However, flag lots will not be permitted merely to increase the density of development or to minimize the amount of road improvements. The following requirements will apply:

(1) No more than two (2) flag lots will be permitted per original tract of land, even if lots are subdivided from the tract at different times.

(2) The access lane will have a minimum width of twenty-five (25) feet, be contained entirely within the lot and serve only one (1) lot.

(3) The access lane will have a maximum length of five hundred (500) feet measured from the right-of-way of the public road to the perimeter of the rectangle defining the lot area.

(4) The area in the access lane shall be excluded from the area required for meeting the minimum lot size standards of the Zoning Ordinance [Chapter 27]

(5) No sharp turns (greater than forty-five (45) degrees) shall be allowed within the access lane.

(6) The location of the access lane shall be logically related to the body of the flag lot, surrounding property configurations, woodlands, topography, watercourses and floodplains.

(Ord. 577, 10/2/1989, §420)

§404. Street Design Standards.

1. General Requirements.

A. Proposed streets shall be properly related to the road and highway plans of the State, County and Borough. Streets shall be designed to provide adequate vehicular access to all lots or parcels and with regard for topographic conditions, projected volumes of traffic, and further subdivision possibilities in the area.

B. The street system of a proposed subdivision or land development shall be designed to create a hierarchy of street functions, which includes collector and local streets.

C. The street system of a proposed subdivision or land development shall be designed so as to minimize street intersections and pedestrian-vehicular conflict points.

D. Proposed local streets shall be designed so as to discourage through traffic and excessive speeds. However, the developer shall give adequate consideration to provision for the extension and continuation of collector streets into and from adjoining properties.

E. Where, in the opinion of the Planning Commission, it is desirable to provide for street access to adjoining property, streets shall be extended by dedication to the boundary of such property. Distances between access points to adjoining property shall be based on block length standards set forth in §403(2).

F. Where a subdivision abuts an existing street of improper width or alignment, the Planning Commission may require the dedication of land sufficient to widen the street or correct the alignment.

G. Private streets (streets not to be offered for dedication) may be approved by the Planning Commission only if they meet the street design and improvement standards set forth in this Chapter.

H. If the lots in the development are large enough for re-subdivision, or if a portion of the tract is not subdivided, suitable access and street openings for such an eventuality shall be provided.

2. Street Right-of-Way and Cart Way Widths.

A. Street right-of-way and cart way widths in proposed subdivisions shall conform to the general standards listed below:

Classification of Streets	Street Design Standards Local
1. Right-of-Way Width	50' - 60'
2. Cart Way Width	30' - 36'
3. Traffic Lane Width	10'
4. Parking Lane Width	8' (when required)
5. Sidewalk Width	5' (when required)
6. Curbing	vertical curb

1. Required street right-of-way widths may vary depending upon what is included within the street right-of-way. The main variables in determining the required right-of-way width are the number of traffic lanes required, whether or not parking lanes are required, and whether curbs are required.

2. The main variables in determining the required cart way width are the number of traffic lanes, the number of parking lanes, level of service, curvature in the road, and projected traffic volume.

3. The main variables in determining whether parking lanes should be required are the amount of traffic generated from the type of development proposed, the density of development proposed, and the amount of off-street parking provided.

4. The main variables in determining whether sidewalks should be required are the density and type of proposed development, nature of adjacent development, the presence of sidewalks in adjacent developments, and whether the developer provides an interior pedestrian walkway system as an alternative to sidewalks.

B. The general standards set forth in §404(2)(A) may be modified by the Planning Commission upon the recommendation of the Borough Engineer or PENNDOT when an analysis of proposed development densities, provisions for off-street parking, and projected traffic volumes indicate a need for such modification. The burden of proof shall be upon the developer to justify the adequacy of rights-of-way or cart way widths, which are less than those, set forth in §404(2)(A).

3. Horizontal Curves.

A. Whenever street centerlines are deflected more than five (5) degrees within five hundred (500) feet, connection shall be made by horizontal curves.

B. Horizontal curves shall be designed to produce the following minimum sight distances:

(1) Local streets: one hundred fifty (150) feet.

(2) Collector streets: three hundred (300) feet.

C. A minimum tangent of one hundred (100) feet shall be required between reverse curves on a street and between a curve and a street intersection where one (1) of the intersecting streets is a collector street.

4. Street Grades.

A. There shall be a minimum centerline grade on all streets of seventy-five-hundredths percent (0.75%).

B. Unless approval is obtained from the Borough upon recommendation from the Borough Engineer, centerline grades shall not exceed the following:

(1) Local streets: ten percent (10%).

(2) Collector streets: eight percent (8%).

C. Intersections shall be approached on all sides by leveling areas. Such leveling areas shall have a minimum length of seventy-five (75) feet (measured from the edge of the cart way of the intersecting road), within which no grade shall exceed a maximum of four percent (4%).

5. Vertical Curves.

A. Vertical curves shall be used in changes of grade exceeding one percent (1%).

B. Vertical -curves shall be designed to meet minimum sight distances according to standards set forth by PENNDOT.

6. Street Intersections.

A. Streets shall intersect at right angles whenever practicable. When local streets intersect collector streets, the angle of intersection at the street centerlines shall in no case be less than seventy-five (75) degrees. No two (2) streets shall intersect with an angle of intersection at the centerlines of less than sixty (60) degrees.

B. Multiple intersections involving the junction of more than two (2) streets shall be prohibited.

C. Two (2) streets intersecting a third street from opposite sides shall either intersect with a common centerline or their centerlines shall be offset according to the following distances:

(1) The two (2) streets shall be separated by a distance of one hundred fifty (150) feet between centerlines measured along the centerline of the street being intersected when all three (3) streets involved are local streets.

(2) The two (2) streets shall be separated by a distance of three hundred (300) feet between centerlines measured along the centerline of the street being intersected when one (1) or more of the streets involved is a collector street.

D. Street curb intersections shall be rounded by a tangential arc with a minimum radius of:

(1) Ten (10) feet for intersections involving only local streets; thirty (30) feet for all intersections involving a collector street.

E. Street right-of-way lines shall be parallel to (or concentric with) curb arcs at intersections.

F. Clear sight triangles shall be provided at all street intersections. Within such triangles, no object greater than two (2) feet in height and no other object that would obscure the vision of the motorist shall be permitted. Such triangles shall be established from a distance of:

(1) Seventy-five (75) feet from the point of intersection of the centerlines of two (2) streets where both are local streets.

(2) One hundred (100) feet from the point of intersection of the centerlines of two (2) streets where one (1) is a collector street.

G. Wherever a portion of the line of such triangles occurs within the proposed building setback line, such portion shall be shown on the final plan of the subdivision, and shall be considered a building setback line.

7. Cul-de-Sacs.

A. Dead-end streets are prohibited unless designed as cul-de-sac streets or designed for future access to adjoining properties.

B. Any dead-end street which is constructed for future access to an adjoining property or because of authorized stage development, and which is open to traffic and exceeds two hundred (200) feet in length, shall be provided a temporary, all-weather turning circle. The turning circle shall be completely within the boundaries of the subdivision and the use of the turnaround shall be guaranteed to the public until such time as the street is extended.

C. Cul-de-sac streets, permanently designed as such, shall not exceed one thousand (1,000) feet in length and shall not furnish access to more than twenty-five (25) dwelling units. In the case of industrial parks, a cul-de-sac shall not furnish access to more than one hundred (100) employees. Exemptions from these requirements may be granted where necessary due to unique characteristics of the site.

D. All cul-de-sac streets, whether permanently or temporarily designed as such, shall be provided at the closed end with a fully paved turning circle. The turning circle may be offset to the left and turnarounds offset to the right shall be discouraged.

(1) If parking will be prohibited on the turning circle, the minimum radius of the right-of-way line shall be fifty (50) feet.

(2) If parking will be permitted on the turning circle, the minimum radius to the pavement edge or curb line shall be fifty (50) feet, and the minimum radius of the right-of-way line shall be sixty (60) feet.

E. The centerline grade on a cul-de-sac street shall not exceed ten percent (10%) and the grade of the diameter of the turnaround shall not exceed five percent (5%).

8. Half Streets.

A. The dedication of new half streets at the perimeter of a new subdivision is prohibited.

B. The sub divider shall provide the entire required right-of-way, or as much thereof as is possible, within his property along all existing streets which traverse or abut the property.

9. Street Names and Street Signs.

A. Proposed streets, which are in alignment with others, already existing and named shall bear the name of the existing street.

B. In no case shall the name of a proposed street duplicate an existing street name in the Borough and in the postal district, irrespective of the use of the suffix street, road, avenue, boulevard, driveway, place, court, lane, etc...

C. All street names shall be subject to the approval of Borough Council.

D. Street signs shall be provided at the intersection of all streets. The type, height, and design shall be according to PENNDOT standards and approved by the Planning Commission.

(Ord. 577, 10/2/1989, §430)

§405. Sanitary Sewage Disposal.

1. The developer shall provide the most effective type of sanitary sewage disposal consistent with the Borough's official plan for sewage facilities prepared in accordance with the Pennsylvania Sewage Facilities Act (Act 537) and Chapter 71 of the Pennsylvania Department of Environmental Resources regulations.

2. Connection to a public sanitary sewer system shall be required where such a system is proposed by the Borough's official plan for sewage facilities, can feasibly be provided to the proposed subdivision tract, and where such a system adequately fulfills the sewage disposal needs of the subdivision of land development.

3. Where a public sanitary sewer system is not yet accessible to the site but is planned for extension within a five (5) year period, the developer shall install sanitary sewer lines within the subdivision boundary to the point where the future connection to a public sewer system will be made. Lateral connections shall be constructed for all lots. Connections shall be available in the structures so as to allow the switch from the use of the on-lot systems to the public system. Such sewer systems shall be capped until ready for use. On-lot disposal facilities shall be provided for interim use.

4. In order for a private centralized sanitary sewer system to be approved, the Borough must revise the official plan for sewage facilities by resolution indicating that the system concept is approved.

5. In subdivision/land developments where neither connection to a public sewage system nor a private centralized sewage system is contemplated, on-lot sewage disposal systems shall be provided in accordance with the Pennsylvania Sewage Facilities Act, Chapter 73 of DER Regulations and the requirements of the Borough Sewage Enforcement Officer.

6. Sanitary sewerage systems shall be located and/or designed to minimize flood damage and minimize or eliminate infiltration of floodwaters into the system or discharges from the system into floodwaters.

7. On-lot sewage disposal systems shall be located and/or designed to avoid impairment to them or contamination from them during flooding.

(Ord. 577, 10/2/1989, §440)

§406. Water Supply and Distribution Systems. The developer shall provide a water supply and distribution system to service the proposed subdivision through one (1) of the following methods:

A. Connection shall be made to a public water supply system where such a system can feasibly be provided to the proposed subdivision tract and where the capacity of such a system can adequately fulfill the water supply demands of the proposed subdivision. A distribution system shall be designed to furnish an adequate supply of water to each lot. A copy of the approval document for such a system by the appropriate public authority or utility company shall be submitted with the final plan.

B. Where a public water supply system is planned to serve the proposed subdivision area within ten (10) years, a centralized water system will be provided by the developer where the subdivision involves twenty (20) or more dwelling units unless the average residential lot size is one (1) acre or larger. Whenever such a system is provided, the water distribution lines should be dedicated to the appropriate public authority and the authority will acquire other parts of the water supply system such as wells, pumps and storage tanks that can be integrated into the public water system. This will take place after the improvements are completed so that the system can be operated by the public authority. A copy of the approval of such a system by the appropriate public authority shall be submitted with the final plan. Also, such a system shall be designed and constructed in a manner that would permit adequate connection to a public water supply system in the future. Design and construction standards for centralized water systems are set forth in Appendix A.

C. Where a public water supply is not proposed within ten (10) years in the area of the proposed subdivision and where the average residential lot size is to be less than one (1) acre, a centralized water system will be provided by the developer unless the subdivision involves less than twenty (20) dwelling units and may be provided otherwise. Design and construction standards for centralized water supply systems are set forth in Appendix A.

D. All centralized water systems that remain privately owned shall be organized in a manner as to fall within the jurisdiction of the Pennsylvania Public Utility Commission.

E. Water supply systems shall be located and/or designed to minimize or eliminate infiltration of floodwaters so as to meet Federal Insurance Administration provisions.

F. All on-lot water supplies shall be installed in conformance with Appendix A.

(Ord. 577, 10/2/1989, §450)

§407. Storm Drainage Systems.

1. Storm drainage systems shall be provided in order to:

A. Permit unimpeded flow within natural watercourses except as modified by storm water detention facilities required by §407(3) or open channels pursuant to §407(2)(H).

B. Ensure adequate drainage of all low points along the line of streets.

C. Intercept storm water runoff along streets at intervals related to the extent and grade of the area drained.

D. Provide positive drainage away from on-site sewage disposal systems.

E. Take surface water from the bottom of vertical grades, lead water from springs and avoid excessive use of cross-gutters at street intersections and elsewhere.

F. Prevent overloading of downstream drainage systems and watercourses as a result of increased rate of runoff caused by the proposed development.

2. General Requirements.

A. A site drainage plan for the proposed subdivision tract shall be prepared which illustrates the following information:

(1) Mapping of the watershed area or areas in which the proposed subdivision is located.

(2) Calculation of runoff for all points of runoff concentration within the site.

(3) Complete drainage systems for the subdivision. All existing drainage features, which are to be incorporated in the design, shall be so identified. If the subdivision is to be developed in stages, a general drainage plan for the entire subdivision shall be presented with the first stage and appropriate development stages for the drainage system shall be indicated.

B. The existing points of natural drainage discharge onto adjacent property shall not be altered.

C. No storm water runoff or natural drainage shall be so diverted as to overload existing drainage systems, or create flooding or the need for additional drainage structures on other private properties or public lands, without approved provisions being made by the developer for properly handling such conditions.

D. Storm drainage systems through the subdivision/land development shall be designed to convey the peak run-off that will occur when all tributary areas upstream are developed to the extent reasonably projected during the next forty (40) years. The calculation of this runoff rate shall take into account the land use and development regulations including runoff controls in effect in the tributary areas.

E. Where a subdivision is traversed by watercourses other than permanent streams, there shall be provided a drainage easement conforming substantially with the line of such watercourse. The width of the easement shall be adequate to provide for unimpeded flow of storm runoff based on calculations made in conformance with §407(4) and to provide a freeboard allowance of one-half (1/2) foot above the design water surface level. The terms of the easement shall prohibit excavation, the placing of fill or structures, and any alterations, which may adversely affect the flow of storm water within any portion of the easement. Also, periodic cutting of vegetation in all portions of the easement shall be required.

F. Drainage facilities that are located on State highway rights-of-way shall be approved by the Pennsylvania Department of Transportation and a letter indicating such approval shall be directed to the Borough Planning Commission.

G. All streets shall be designed so as to provide for the eventual discharge of surface water away from their rights-of-way.

H. When it can be shown to the satisfaction of the Borough Engineer that, due to topographic conditions, natural drainage swales on the site cannot adequately provide for drainage, open channels may be constructed conforming substantially to the line and grade of such natural drainage swales. Capacities of open channels shall be calculated using the Manning equation as explained in Appendix B.

I. Storm drainage facilities and appurtenances shall be so designed and provided as to minimize erosion in watercourse channels and at all points of discharge.

3. Storm Water Detention.

A. Storm water detention facilities shall be used whenever increased runoff from the land development would overload drainage systems or cause significant increases in flood levels in any watercourses downstream. This will be determined by comparing the increase in runoff caused by the land development with the existing runoff rates and capacity of downstream drainage systems and watercourses.

B. Whenever detention facilities are required under §407(3)(A), facilities will be designed to provide that the peak runoff rate at all points of discharge from the site, when developed, will not exceed the peak runoff rate at each of those points prior to development.

C. Where detention facilities are included as part of the storm drainage system, the following provisions will apply:

(1) Detention ponds shall be designed so that they return to normal conditions within approximately twelve (12) hours after the termination of the storm, unless the Borough Engineer finds that downstream conditions may warrant other design criteria for storm water release.

(2) The developer shall demonstrate that such ponds are designed, protected and located to assure that public safety is maximized and health problems are prevented.

(3) The developer shall verify that the operation of the detention facilities will not aggravate potential downstream peaking conditions.

(4) Emergency overflow facilities shall be provided for detention facilities to handle runoff in excess of design flows.

(5) If the lands of the proposed land development will remain in common ownership, the developer shall provide written assurances to the Borough that the detention ponds will be properly maintained.

(6) If the lands of the proposed land development will be conveyed to two (2) or more separate owners, the developer shall provide written assurances to the Borough that the detention ponds will be properly maintained, or dedicate the land on which the detention ponds are located to the Borough which shall then be responsible for maintaining the detention ponds.

4. Calculation of Runoff and Design Storm Frequency.

A. Storm drainage systems required by this Chapter shall be designed to provide protection from a ten (10) to one hundred (100) year storm as determined by the Planning Commission. A ten (10) year design storm is appropriate where a storm in excess of a design storm would have minor impact such as inconvenience to traffic on local streets. A twenty-five (25) year design storm is appropriate where a storm in excess of the design storm would cause major inconvenience to people and traffic in high use areas such as business districts and major highways. A one hundred (100) year design storm is appropriate where a storm in excess of the design storm would cause damage to existing or future structures or their contents.

B. Storm water runoff from watersheds of two hundred (200) or less acres shall be calculated by the rational method as described in Manual Number 37 of the American Society of Civil Engineers. The rational method of runoff calculation is explained in Appendix B.

C. Storm water runoff from watersheds of more than two hundred (200) acres shall be calculated using the soil cover complex method developed by the Soil Conservation Service or other appropriate method acceptable to the Borough Engineer.

D. The design of any detention facility shall be verified by routing the proposed post-development hydrograph through the basin using a storage indication technique.

E. The Manning equation explained in Appendix B shall be used in calculating capacities of watercourses and storm sewers, except culverts, which shall be designed using methods acceptable to the Borough Engineer.

F. Complete detailed drainage calculations and applicable charts and monographs certified by the design engineer shall be submitted to the Borough Engineer.

5. Improvements Specifications.

A. Inlets shall be designed and located to prevent hazardous conditions for vehicles, bicycles or pedestrians.

B. The Borough Engineer should add additional specifications, which may be necessary for spacing and type of inlets and manholes, minimum pipe sizes, and materials and construction methods.

(Ord. 577, 10/2/1989, §460)

§408. Underground Utilities and Utility Easements.

1. In accordance with the Pennsylvania Public Utility Commission Investigation Docket No. 99, as amended from time to time, all electric utility distribution lines shall be installed underground in subdivisions or land developments of five (5) or more dwelling units. In addition, the following design requirements shall be observed:

A. Established public utility and State and Federal governmental agency design standards shall be observed in preparing the utility plan.

B. Utility lines to be installed within street rights-of-way shall be located according to Borough or Municipal Authority requirements.

C. Whenever practicable, telephone and cable TV utilities shall be installed underground in connection with the installation of electric distribution lines.

D. Street lighting, where required, shall be provided at each intersection of the development and at intervals not to exceed two hundred fifty (250) feet between intersections.

E. Utility lines shall be installed at the rough grade phase of construction. Utility lines shall be installed according to their depth, with the utility line installed at the greatest depth being installed first.

2. Utility Easements.

A. Utility easements shall be provided for all utility lines servicing the abutting lots when such utility lines are installed outside street rights-of-way. No structures or trees shall be placed within such easements. The location of utility easements shall be acceptable to the appropriate public utility or Municipal Authority.

B. Utility easements shall be located either:

(1) Abutting the street right-of-way. In this case a minimum easement width of ten (10) feet shall be required.

(2) Along rear or side of lot lines. In this case a minimum easement width of twenty (20) feet, ten (10) feet on each side of the lot line, shall be provided. Where the lot line coincides with the subdivision boundary a minimum easement width of fifteen (15) feet may be required by the Commission.

3. Petroleum and Natural Gas Transmission Lines. No company intending to install any petroleum, petroleum product or natural gas transmission line shall be allowed to construct the line on less than a fifty (50) foot right-of-way, between any proposed dwelling unit and any petroleum, petroleum products or natural gas transmission line which traverses the subdivision.

4. Flood Proofing. Facilities for gas, electric and communication utilities shall be elevated or flood proofed to a level at least one (1) foot above the one hundred (100) year flood elevation.

(Ord. 577, 10/2/1989, §470)

§409. Environmental Protection and Open Space Preservation.

1. Erosion and Sedimentation Control.

A. All earth-moving activities shall be conducted in such a way as to prevent accelerated erosion and the resulting sedimentation.

B. No earth-moving or soil disturbance may take place until an erosion and sedimentation control plan has been developed in accordance with Chapter 102, Erosion Control, P.L. 1987. Such a plan is to be maintained on the construction site until all disturbed areas are finally stabilized.

C. The erosion and sedimentation control plan shall be developed in the form outlined in the Soil Erosion and Sedimentation Control Manual, issued by the Department of Environmental Resources.

D. All erosion and sedimentation control plans shall be submitted with the final plan as set forth in §303(4)(K) of this Chapter.

E. When it has been determined that an earth-moving permit is required, the application for such a permit must be filed with the County Conservation District. The applicant shall submit an erosion and sedimentation control plan to the County Conservation District for review and recommendations whether a permit for earth-moving is required or not.

2. Natural Feature Preservation.

A. The design and development of all subdivisions and land developments shall preserve, whenever possible, natural features which will aid in providing adequate open space for recreation and conditions generally favorable to the health, safety, and welfare of the residents. Some of these natural features are the natural terrain of the site, woodland areas, large trees, natural watercourses and bodies of water, wetlands, rock outcroppings, and scenic views. More detailed standards concerning the preservation of specific natural features are set forth in the following subsections.

B. Floodplain Regulation.

(1) A map illustrating flood elevations for the tract for a one hundred (100) year flood, where applicable, shall be submitted as part of the sketch plan material as set forth in §301. The flood elevation map shall be based on the Nazareth Borough Flood Insurance Rate Map (FIRM). When not available, the map shall be based on an estimated one hundred (100) year flood elevations or estimated areas subject to flooding based on best available data.

(2) A developer shall adhere to the following standards within areas designated as regulatory flood ways and flood fringe areas on the flood elevation map.

(a) No buildings are to be constructed in regulatory floodways. Other encroachments may be permitted provided that the encroachment will not cause any increase in the one hundred (100) year flood elevation at any point. Consideration of the effects of a proposed use shall be based on a reasonable assumption that there will be an equal degree of encroachment extending for a significant reach on both sides of the stream.

(b) Structures may be permitted in flood fringe areas provided that the lowest floor (including basement) is elevated at least one (1) foot above the one hundred (100) year flood elevation and that the proposed improvements will not increase the water surface elevation of the one hundred (100) year flood by more than one (1) foot at any point. The lowest floor of non-residential structures may be constructed below the one hundred (100) year flood elevation provided that below this elevation the structure is watertight with walls substantially impermeable to the passage of water and is designed with structural components having the capability of resisting forces caused by floodwaters.

C. Stream Frontage Preservation.

(1) Stream frontage shall be preserved as open space whenever possible. This area may be credited toward the open space requirement set forth in §409(3).

(2) Access to the water and maintenance easement area shall be provided at intervals of not more than one-half (1/2) mile. These access points shall not be less than one hundred (100) feet in width.

D. Tree Preservation and Planting.

(1) Trees six (6) inches or more in diameter (measured at a height four and one-half (4 ½) feet above grade) may be removed if they are located within the proposed cart way or sidewalk portion of a proposed street right-of-way, or within fifteen (15) feet of the foundation area of a new building with the approval of the Planning Commission. Areas in which trees are retained shall remain at original grade level and undisturbed wherever possible.

(2) Where no existing trees are retained along proposed street rights-of-way, trees shall be planted at intervals of between fifty (50) and one hundred (100) feet but in no instance shall there be less than one (1) tree per lot. Trees shall not be retained or planted within three (3) feet of the street curb or the sidewalk. Trees may be retained or planted between the street curb and the sidewalk if there is a minimum distance of six (6) feet.

(3) A landscape plan shall be drawn for all commercial, industrial and multi-family developments. The plan shall show existing and proposed vegetative cover.

(4) The landscape plan shall include trees in addition to those required along the street rights-of-way. The following standards are to be used as a guide to the number, not the spacing or location, of additional trees required.

(a) One (1) tree per dwelling unit.

(b) One (1) tree per fifty (50) linear feet of newly constructed street.

(5) Where the species and size of the plantings is not additionally controlled by the provisions of the Shade Tree Ordinance [Chapter 25], consideration shall be given in the species selection to disease and storm resistance.

E. Topsoil Protection. Topsoil shall not be removed from the development site or used as fill. Topsoil shall be removed from the areas of construction and stored separately. The topsoil shall be stabilized to minimize erosion during storage. Upon completion of the construction, topsoil must be uniformly redistributed on the site.

3. Open Space and Recreation Areas. Subject to the provisions and requirements of the Municipalities Planning Code, the open space and recreation needs of subdivisions and land developments shall be met as follows:

A. For subdivisions and land developments involving less than sixty (60) lots or dwelling units, cash in lieu of recreation space shall be provided as set forth in §409(3) (C).

B. For subdivisions and land developments involving sixty (60) or more lots or dwelling units, the recreation needs shall be met as follows:

(1) Land may be offered for dedication to the Borough, subject to approval by Borough Council. A minimum of seven hundred fifty (750) square feet per lot or dwelling unit shall be provided. The land offered for dedication shall not: (1) be subject to flooding, (2) have slopes in excess of fifteen percent (15%), (3) include storm water management facilities, (4) include wetlands, or (5) include quarries and/or other dangerous features. The Borough Council shall consider the offer relative to the following factors:

(a) The suitability of the size, shape and landform of the tract for appropriate recreational facilities.

(b) Accessibility for future users.

(c) Conformity with the recreation element of the Comprehensive Plan.

(d) The ability to provide adequate security.

(2) Cash in lieu of open space may be provided as set forth in §409(3)(C).

C. Cash in lieu of open space and recreation land dedication shall be provided to and used by the Borough as follows:

(1) The cash in lieu shall be one thousand dollars (\$1,000.00) per lot or dwelling unit whichever is greater.

(2) The use of the monies purchase of lands for recreation improvement of said areas, or other

(Ord. 577, 10/2/1989, §480, as amended by Ord. 663, 3/6/2000)

Part 5

Improvement Specifications

§501. General Requirements.

1. Physical improvements to the subdivision/land development tract shall be provided, constructed, and installed as shown on the record plan, in accordance with the requirements of the Commission.

2. As a condition to review of a final plan, the developer shall agree with the Planning Commission as to installations of all improvements shown on the plan and required by this Chapter. Before the record plan may be endorsed, the developer shall submit a completed and executed original copy of the subdivision improvements agreements and performance and maintenance guarantees in the amount required by §503.

3. All improvements installed by the developer shall be constructed in accordance with the design specifications of the Planning Commission. The Planning Commission shall instruct the Borough Engineer to prepare improvement specifications for a required improvement in cases where no applicable Borough specifications exist.

4. Supervision of the installation of those improvements required by §502 shall in all cases be the responsibility of the Borough Engineer.

(Ord. 577, 10/2/1989, §500)

§502. Required Improvements.

1. Improvements shall be provided, constructed, and installed by the developer as stated in the improvements agreement, shown on the record plan, and in accordance with the design standards set forth in Part 4 of this Chapter. The following improvements will be required in all applicable cases:

A. Street excavating, grading, sub grade preparation, base course paving and surface course paving installed according to Borough specifications.

B. Concrete curbing of the vertical type, or stabilized shoulder and drainage swale with no curbing installed according to Borough specifications.

C. Concrete sidewalks or interior walkways installed according to Borough specifications.

D. Sanitary sewer system improvements installed according to the specifications of the Nazareth Borough Municipal Authority and the Pennsylvania Department of Environmental Resources.

E. Water supply and distribution system improvements installed according to the specifications of the Pennsylvania Department of Environmental Resources.

F. Storm drainage system improvements installed according to this Chapter.

G. Monuments shall be installed as follows:

(1) Permanent concrete monuments or iron pipes shall be accurately placed at the intersection of all lines forming angles and at changes in direction of lines in the boundary (perimeter) of the property subdivided.

(2) All monuments shall be placed by a registered professional engineer or surveyor so that the center shall coincide exactly with the point of intersection of the line being monumented.

(3) Monuments shall be set with their top level with the finished grade of the surrounding ground, except:

(a) Monuments, which are placed within the lines of existing or proposed sidewalks, shall be so located (preferably beneath the sidewalks) that their tops will not be affected by lateral movement of the sidewalks.

(b) Where monuments are located beneath a sidewalk, proper access shall be provided for their use.

(c) Where sidewalks are existing, a stone point (a four (4) inch square chisel cut in the sidewalk with a drill hole in center) may be substituted for a monument.

H. Fire hydrants shall be installed within six hundred (600) feet of all structures, measured by way of accessible streets.

I. Street lights in accordance with conditions to be agreed upon by the developer, the Planning Commission and the appropriate public utility.

J. Street signs installed according to Planning Commission.

K. Shade trees planted according to this Chapter and the Shade Tree Commission regulations.

L. Traffic control signs installed according to PENNDOT specifications.

(Ord. 577, 10/2/1989, §510)

§503. Improvements Guarantee Procedure.

1. Before the Planning Commission approves any final plan and as a prerequisite for approval, the developer shall deliver to Borough Council, public utility, or Municipal Authority, a performance guarantee in the amount of one hundred ten percent (110%) of the cost of all improvements required by this Chapter, as determined in accordance with the procedures set forth in the Municipalities Planning Code, as amended, in a form and with a surety as determined in accordance with the procedures set forth in the Municipalities Planning Code as amended, guaranteeing the construction and installation of all such improvements before the date fixed in the formal action of approval or accompanying agreement for completion of the improvements. Upon written application signed by both the obligor and surety of the performance guarantee in a form approved by the Borough Solicitor, the Borough Council, public utility, or Municipal Authority may, at their discretion, extend said period by not more than three (3) additional years. If the party posting the financial security requires more than one (1) year from the date of posting of the financial security to complete the required improvements, the amount of financial security may be increased by an additional ten percent (10%) for each one (1) year period beyond the first anniversary date from posting of financial security or to an amount not exceeding one hundred ten percent (110%) of the cost of completing the required improvements as reestablished on or about the expiration of the preceding one (1) year period by using the above bidding procedure. In the event of default under a performance guarantee, the proceeds of the performance guarantee received by the Borough, public utility, or Municipal Authority shall be used to construct and install the improvements.

2. Before the Planning Commission approves any final plan and as a prerequisite for approval, the developer shall deliver to the Borough Council, public utility, or Municipal Authority, a maintenance guarantee in an amount of not less than fifteen percent (15%) of the actual cost of the installation of all improvements required by this Chapter, guaranteeing acceptance of all such improvements by the Borough Council, public utility, or Municipal Authority.

(Ord. 577, 10/2/1989, §520)

§504. Approval of Improvements and Release of Performance Guarantee by the Borough Council, Public Utility, or Municipal Authority.

1. The approval of improvements and release of performance guarantee by the Borough Council, public utility or Municipal Authority, and the inspection of the improvements shall occur in conformance with the procedures prescribed by the Municipalities Planning Code.

2. In the event that any improvements which may be required have not been installed as provided in this Chapter or in accord with the approved final plan, the Borough Council of the Borough, public utility, or Municipal Authority, is hereby granted the power to enforce any corporate bond, or other security by appropriate legal and equitable remedies. If proceeds of such bond, or other security are insufficient to pay the cost of installing or making repairs or corrections to all the improvements covered by said security, the Borough Council of the Borough may, at its option, install part of such improvements in all or part of the subdivision or land development and may institute appropriate legal or equitable action to recover the monies necessary to complete the remainder of the improvements. All of the proceeds, whether resulting from the security or from any legal or equitable action brought against the developer, or both, shall be used solely for the installation of the improvements covered by such security, and not for any other Borough purpose.

(Ord. 577, 10/2/1989, §530)

Part 6

Administration

§601. Amendments. Amendments to this Chapter shall become effective only after a public hearing held pursuant to public notice in the manner prescribed for enactment of a subdivision and land development ordinance by the Pennsylvania Municipalities Planning Code. In addition, in case of an amendment other than that prepared by the Planning Commission, the Council shall submit each such amendment to the Planning Commission for recommendations at least thirty (30) days prior to the date fixed for the public hearing on such proposed amendment. (Ord. 577, 10/2/1989, §600)

§602. Appeals. The decisions of the Planning Commission with respect to the approval or disapproval of subdivision or land development plans may be appealed directly to court in the same manner and within the same time limitations as is provided for zoning appeals in Article X of the Pennsylvania Municipalities Planning Code. (Ord. 577, 10/2/1989, §610)

§603. Preventive Remedies.

1. In addition to other remedies, the Borough may institute and maintain appropriate actions by law or in equity to restrain, correct or abate violations, to prevent unlawful construction, to recover damages and to prevent illegal occupancy of a building, structure or premises. The description by metes and bounds in the instrument of transfer or other documents used in the process of selling or transferring shall not exempt the seller or transferor from such penalties or from the remedies herein provided.

2. The Borough may refuse to issue any permit or grant any approval necessary to further improve or develop any real property which has been developed or which has resulted from a subdivision of real property in violation of this Chapter. This authority to deny such a permit or approval shall apply to any of the following applicants:

A. The owner of record at the time of such violation.

B. The vendee or lessee of the owner of record at the time of such violation without regard as to whether such vendee or lessee had actual or constructive knowledge of the violation.

C. The current owner of record who acquired the property subsequent to the time of violation without regard as to whether such current owner had actual or constructive knowledge of the violation.

D. The vendee or lessee of the current owner of record who acquired the property subsequent to the time of violation without regard as to whether such vendee or lessee had actual or constructive knowledge of the violation.

3. As an additional condition for issuance of a permit or the granting of an approval to any such owner, current owner, vendee or lessee for the development of any such real property, the Borough may require compliance with the conditions that would have been applicable to the property at the time the applicant acquired an interest in such real property.

(Ord. 595, 10/7/1991)

§604. Enforcement Remedies.

1. Any person, partnership or corporation who or which has violated the provisions of this Chapter shall, upon being found liable therefor in a civil enforcement proceeding commenced by the Borough, pay a judgment of not more than five hundred (\$500.00) dollars plus all court costs, including reasonable attorney fees incurred by the Borough as a result thereof. No judgment shall commence or be imposed, levied or

payable until the date of the determination of a violation by the district justice. If the defendant neither pays nor timely appeals the judgment, the Borough may enforce the judgment pursuant to the applicable rules of civil procedure. Each day that a violation continues shall constitute a separate violation, unless the district justice determining that there has been a violation further determines that there was a good faith basis for the person, partnership, or corporation violating this Chapter to have believed that there was no such violation, in which event there shall be deemed to have been only one such violation until the fifth (5th) day following the date of the determination of a violation by the district justice and thereafter each day that a violation continues shall constitute a separate violation.

2. The court of common pleas, upon petition, may grant an order of stay, upon cause shown, tolling the per diem judgment pending a final adjudication of the violation and judgment.

3. Nothing contained in this Section shall be construed or interpreted to grant to any person or entity other than the Borough the right to commence any action for enforcement pursuant to this Section.

4. District justices shall have initial jurisdiction in proceedings brought under this Section.

(Ord. 571, 10/2/1989, §620; as amended by Ord. 595, 10/7/1991)

§605. Validity and Conflicts.

1. Should any action or provisions of this Chapter be declared by the court to be invalid, such decision shall not affect the validity of the Chapter as a whole, nor the validity of any other Section or provision of the Chapter than the one so declared.

2. Whenever there is a conflict between minimum standards or requirements set forth in this Chapter and those contained in other municipal ordinances and regulations, or other applicable laws and regulations, the most stringent standard or requirement shall apply.

(Ord. 577, 10/2/1989, §630)

§606. Fees.

1. The Borough Council shall establish, by resolution, a collection procedure and schedule of fees to be paid by the developer at the time of filing of the preliminary and final plans.

2. Charges for field inspection shall be established by the Borough Council in order to recover Borough costs.

3. No final plan shall be approved unless all fees and charges are paid in full.

(Ord. 577, 10/2/1989, §640)

Part 7

Definitions

§701. General Terms.

1. Unless otherwise expressly stated, the following terms shall, for the purpose of this Chapter, have the meaning indicated:

A. Words in the singular include the plural and those in the plural include the singular.

B. Words in the present tense include the future tense.

C. The words "person," "developer," "sub divider," and "owner" include a corporation, unincorporated association, a partnership, or other legal entity, as well as an individual.

D. The word "building" includes structure and shall be construed as if followed by the phrase "or part thereof."

E. The words "should" and "may" are permissive; the words "shall" and "will" are mandatory and directive.

2. The following terms shall refer to officials or commissions or related agencies of the Borough of Nazareth:

- A. Borough
- B. Council or Borough Council
- C. Planning Commission
- D. Borough Engineer
- E. Borough Solicitor
- F. Borough Sewerage Enforcement Officer

3. Municipal Authority shall refer to the Nazareth Borough Municipal Authority.

(Ord. 577, 10/2/1989, §700)

§702. Specific Terms. Other terms or words used herein shall be interpreted or defined as follows:

APPLICANT - a landowner or developer, as hereinafter defined, who has filed an application for development including his heirs, successors and assigns.

BLOCK - Property bounded on one (1) side by a street, and other three (3) sides, by a street, railroad right-of-way, waterway, un-subdivided area, or other definite barrier.

BUILDING, ACCESSORY - A detached subordinate building, the use of which is customarily incidental and subordinate to that of the principal building, and which is located on the same lot as that occupied by the principal building.

BUILDING, PRINCIPAL - A structure enclosed within exterior walls or fire walls; built, erected, and framed of component structural parts; designed for the housing, shelter, enclosure, and support of individuals, animals, or property of any kind; main structure on a given lot.

BUILDING SETBACK LINE - The line within a property defining the minimum required front yard distance between any building to be erected, and an adjacent right-of-way.

CLEAR SIGHT TRIANGLE - An area of unobstructed vision at street intersections defined by lines of sight between points at a given distance from the intersection of the street center line.

COMMON OPEN SPACE - A parcel or parcels of land, an area of water, or a combination of land and water within a development site designed and intended for the use of residents of the development, not including streets, off-street parking area, private yard space, and areas set aside for non-residential and public facilities. Common open space shall be substantially free of structures but may contain such improvements as are appropriate for recreational use by the residents.

COMPREHENSIVE PLAN - The maps, charts, and textual material adopted by the Borough in accordance with the Pennsylvania Municipalities Planning Code and designated, as a whole and in its several parts, as a comprehensive plan for the continuing development of the Borough of Nazareth.

COUNTY CONSERVATION DISTRICT - The Northampton County Conservation District.

CUT - An excavation. The difference between a point on the original ground and a designated point of lower elevation on the final grade. Also, the material removed in excavation.

DEVELOPER - Any landowner, agent of such landowner, or tenant with the permission of such landowner, who makes or causes to be made a subdivision of land or a land development.

DOUBLE or REVERSE FRONTAGE LOT - A lot extending between and having frontage on two (2) generally parallel streets with vehicular access from only one (1) street.

DWELLING UNIT - Any structure, or part thereof, designed to be occupied as living quarters as a single housekeeping unit.

EASEMENT - A right-of-way granted, but not dedicated, for limited use of private land for a public or quasi-public purpose, and within which the owner of the property shall not erect any permanent structures, but shall have the right to make any other use of the land which is not inconsistent with the rights of the grantee.

ENGINEER - A professional engineer licensed as such in the Commonwealth of Pennsylvania.

EROSION - The removal of surface materials by the action of natural elements.

EROSION AND SEDIMENTATION CONTROL PLAN - A plan designed to prevent on-site accelerated erosion and off-site sedimentation through the use of vegetative or mechanical controls. Control measures must be designed to fit the topography, soils, rainfall, and land use of the area they are to protect. The plan includes as a minimum (a) a map or maps describing the topography of the area, the proposed alteration to the area and the specific erosion and sedimentation control measures and facilities; and (b) a narrative report describing the project and giving the purpose and the engineering assumptions and calculations for control measures and facilities.

FLAG LOT - A lot with direct frontage on a public road which does not meet the required lot width at the minimum required front yard setback line, which consists of an access lane with a minimum width of twenty-five (25) feet and a rectangular area, the dimensions of which exceed the minimum lot width requirements as established in the Borough Zoning Ordinance [Chapter 27].

FLOOD, ONE HUNDRED (100) YEAR - The flood having a one percent (1%) chance of being equaled or exceeded in any given year.

FLOOD FRINGE - That portion of the floodplain outside the floodway.

FLOODPLAIN - The area of normally dry land along a natural watercourse, which is periodically inundated by water therefrom.

FLOODWAY, REGULATORY - The channel of a watercourse and the adjacent land areas that must be reserved in order to discharge the one hundred (100) year flood. The regulatory floodway is designated on the flood boundary and floodway map of the Borough's flood insurance study prepared by the Federal Insurance Administration.

IMPROVEMENTS - Those physical additions and changes to the land that may be necessary to produce usable and desirable lots.

JOINT PLANNING COMMISSION (JPC) - The Joint Planning Commission of Lehigh and Northampton Counties, Pennsylvania.

JOINT PLANNING COMMISSION SPECIFICATIONS - The specifications as appear in the booklet entitled "Subdivision Regulations for Lehigh and Northampton Counties," dated February 1981, prepared by the G. Edwin Pidcock Company, which specifications are hereby, declared to be Appendix C to this Chapter.

LAND DEVELOPMENT - Any of the following activities:

A. The improvement of one (1) lot or two (2) or more contiguous lots, tracts, or parcels of land for any purpose involving, (i) a group of two (2) or more residential or non-residential buildings, whether proposed initially or cumulatively, or a single non-residential building on a lot or lots regardless of the number of occupants or tenure, or (ii) the division or allocation of land or space, whether initially or cumulatively, 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.

B. A subdivision of land.

LANDOWNER - The legal or beneficial owner or owners of land including the holder of an option or contract to purchase (whether or not such option or contract is subject to any condition), a lessee if he is authorized under the lease to exercise the rights of the landowner, or other person having a proprietary interest in land.

LOT - A designated parcel, tract or area of land established by a plat or otherwise as permitted by law and to be used, developed or built upon as a unit.

LOT AREA - The area contained within the property lines of a lot (as shown on the plan), excluding space within all streets and within all permanent drainage easements, but including the areas of all other easements.

LOWEST FLOOR - The lowest floor of the lowest enclosed area (including basement). An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access or storage, in an area other than a basement area, is not considered a building's lowest floor, provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of this Chapter.

MAINTENANCE GUARANTEE - Security in a form in accord with the provisions set forth in the Municipalities Planning Code, as amended, which insures the structural integrity of the improvements as well as the functioning of said improvements in accordance with the design and specifications as depicted on the final plat for a period not to exceed eighteen (18) months after acceptance of said improvements by the Borough Council, public utility, or Municipal Authority.

MOBILE HOME - A transportable, single family dwelling intended for permanent occupancy, contained in one (1) unit, or in two (2) or more units designed to be joined into one (1) integral unit capable of again

being separated for repeated towing, which arrives at a site complete and ready for occupancy except for minor and incidental unpacking and assembly operations, and constructed so that it may be used without a permanent foundation.

MONUMENT - Reinforced concrete with minimum dimensions of four (4) inches by four (4) inches by thirty (30) inches. Concrete monuments shall have a one-half (1/2) inch diameter rod through the center and flush with the top. Monuments may be iron pipes and shall be three-fourths (3/4) inch black steel rod thirty (30) inches long.

MUNICIPAL AUTHORITY - the Nazareth Borough Municipal Authority.

MUNICIPALITY - The Borough of Nazareth.

OFFICIAL MAP - A map adopted by ordinance pursuant to Article IV of the Municipalities Planning Code, as amended. [Ord. 595]

OFFICIAL PLAN; SEWAGE FACILITIES - A comprehensive plan for the provision of adequate sewage systems adopted by a municipality or municipalities possessing authority or jurisdiction over the provision of such systems and submitted to and approved by the State Department of Environmental Resources as provided by the Pennsylvania Sewage Facilities Act, and Chapter 71, Rules and Regulations, promulgated thereunder.

PAVEMENT WIDTH (CARTWAY) - The portion of a street right-of-way, generally paved, intended for vehicular use.

PERFORMANCE GUARANTEE - Security in a form in accord with the provisions set forth in the Municipalities Planning Code, as amended, to guarantee that the proper construction of improvements be made by the developer as a condition for the approval of the plan.

PLAN, SKETCH - An initial submission, by the developer, of maps and other materials analyzing the natural features of the site as they relate to its development potential. The proposed concept for development of the tract is included in the submission.

PLAN, PRELIMINARY - A tentative plan, in lesser detail than a final plan, showing proposed streets and lot layout and such other information as required by this Chapter.

PLAN, FINAL - A complete and exact plan prepared for official recording as required by this Chapter to define property rights, streets and other proposed improvements.

PLAN, RECORD - The copy of the final plan which contains the original endorsements of the Joint Planning Commission and the Planning Commission and which is intended to be recorded with the County Recorder of Deeds.

PLANNING MODULE FOR LAND DEVELOPMENT - A document to be prepared by the developer or sub divider, accepted by the Borough, and submitted to the Pennsylvania Department of Environmental Resources to provide proposed development data in order to supplement or revise the Official Plan for sewage facilities.

PLAT - The map or plan of a subdivision or land development, whether preliminary or final.

RE-SUBDIVISION - Any re-platting or re-subdivision of land, limited to changes in lot lines on approved final plans or recorded plans as specified in this Chapter. Other re-plattings shall be considered as constituting a new subdivision of land. See also "Subdivision."

RIGHT-OF-WAY - The total width of any land reserved or dedicated as a street, sidewalk, or for other public or quasi-public purposes.

RUNOFF - Water that is derived directly from precipitation and passes over the ground into watercourses.

SANITARY SEWAGE DISPOSAL, PUBLIC - A sanitary sewage collection system in which sewage is carried from individual lots by a system of pipes to a central treatment and disposal plant, generally serving a major portion of a municipality or municipalities, and operated by a governmental agency, governmental authority, or public utility company.

SANITARY SEWAGE DISPOSAL, CENTRALIZED - A sanitary sewage collection system in which sewage is carried from individual lots by a system of pipes to a central treatment and disposal plant, commonly called a "package treatment plant," generally serving a single land development subdivision, or neighborhood, and operated by a governmental agency, governmental authority, public utility company, or a developer.

SANITARY SEWAGE DISPOSAL, ON-LOT - Any structure designed to treat sanitary sewage within the boundaries of an individual lot.

SEDIMENTATION - The process by which mineral or organic matter is accumulated or deposited by moving wind, water, or gravity. Once this matter is deposited (or remains suspended in water), it is usually referred to as "sediment."

SEWAGE ENFORCEMENT OFFICER - The municipal official who issues and reviews permit applications and conducts investigations and inspections as are necessary to implement Act 537 and the rules and regulations thereunder.

SIGHT DISTANCE - The required length of roadway visible to the driver of a motor vehicle at any given point on the roadway when the view is unobstructed by traffic. Sight distance measurements shall be made from a point three and seventy-five hundredths (3.75) feet above the centerline of the road surface to a point one-half (1/2) foot above the centerline of the road surface.

SLOPE - The face of an embankment or cut section; any ground whose surface makes an angle with the plane of the horizon. Slopes are usually expressed in a percentage based upon vertical difference in feet per one hundred (100) feet of horizontal distance.

STREET - includes street, avenue, boulevard, road, highway, freeway, parkway, lane, alley, viaduct and any other ways used or intended to be used by vehicular traffic or pedestrians whether public or private.

A. **COLLECTOR STREET** - A street which, in addition to providing access to abutting properties, intercepts local streets to provide a route giving access to community facilities and/or other collector and arterial streets (streets in industrial and commercial subdivisions shall generally be considered collector streets).

B. **LOCAL STREET** - A street used primarily to provide access to abutting properties.

C. **CUL-DE-SAC STREET** - A local street intersecting another street at one (1) end, and terminating in a vehicular turnaround at the other.

D. **HALF (PARTIAL) STREET** - A street, generally parallel and adjacent to a property line, having a lesser right-of-way width than normally required for improvement and use of the street.

E. MARGINAL ACCESS STREET - A local street, parallel and adjacent to a major street (but separated from it by a reserve strip) which provides access to abutting properties and control of intersections with the major street.

F. SERVICE STREET (ALLEY) - A minor right-of-way providing secondary vehicular access to the side or rear of two (2) or more properties.

STORMWATER DETENTION FACILITIES - Basins, ponds, ponding areas, depressions or other structures or features used to temporarily store rainfall and release it at a controlled rate.

STORM DRAINAGE SYSTEMS - All facilities and features such as pipes, culverts, open channels, ditches, swales, storm water detention facilities, etc., used to transmit or temporarily store surface water runoff.

STRUCTURE - Any man-made object having an ascertainable stationary location on or in land or water, whether or not affixed to the land.

SUBDIVISION - the division or re-division of a lot, tract or parcel of land by any means into two (2) or more lots, tracts, parcels or other divisions of land including changes in existing lot lines for the purpose, whether immediate or future, of lease, partition by the court for distribution to heirs or devisees, transfer of ownership or building or lot development: Provided, however, that the subdivision by lease of land for agricultural purposes into parcels of more than ten (10) acres, not involving any new street or easement of access or any residential dwelling, shall be exempted. [Ord. 595]

MINOR SUBDIVISION - A residential subdivision which does not and will not in the future involve more than a total of two (2) lots, including the residue parcel, and does not involve the provision of any new street or easement for access. Such subdivision applications shall be processed in accordance with the provisions of §209.

SURVEYOR - A licensed surveyor registered by the Commonwealth of Pennsylvania.

SWALE - A low-lying stretch of natural or man-made land, which gathers or carries surface water runoff.

TESTING ON-LOT SANITARY SEWER SYSTEMS - Soil tests and percolation tests conducted by the Borough Sewage Enforcement Officer in compliance with Chapter 73 of Pennsylvania Department of Environmental Resources regulations in order to determine whether a permit may be issued for installation of on-lot sewage disposal system.

TOPSOIL - Surface soils and subsurface soils, which presumably are fertile, soils and soil material, ordinarily rich in organic matter or humus debris. Topsoil is usually found in the uppermost soil layer called the A Horizon.

WATERCOURSES - A natural or man-made permanent stream, river, brook, creek, channel, swale, or ditch for water.

WATER SUPPLY AND DISTRIBUTION SYSTEM, PUBLIC - A system for supplying and distributing water from a common source to dwellings and other buildings, generally serving a major portion of a municipality or municipalities, and operated by a governmental agency, governmental authority, or a public utility company.

WATER SUPPLY AND DISTRIBUTION SYSTEM, CENTRALIZED - A system for supplying and distributing water from a common source to two (2) or more dwellings and/or other buildings, generally serving a single land development, subdivision or neighborhood, and operated by a governmental agency, governmental authority, public utility company or a developer.

WATER SUPPLY AND DISTRIBUTION SYSTEM, ON-LOT - A system for supplying and distributing water to a single dwelling or other building from a source located on the same lot.

(Ord. 577, 10/2/1989, §700; as amended by Ord. 595, 10/7/1991; and as amended by Ord. 732, 3/5/2007)

**BUSHKILL CREEK WATERSHED
ACT 167 - STORMWATER MANAGEMENT ORDINANCE**

**ARTICLE 1
GENERAL PROVISIONS**

SECTION C-101. SHORT TITLE

This Ordinance shall be known and may be cited as the "Bushkill Creek Watershed Act 167 Stormwater Management Ordinance".

SECTION C-102. STATEMENT OF FINDINGS

The governing body of the municipality finds that:

- A. Inadequate management of accelerated runoff of stormwater resulting from development throughout a watershed increases flood flows and velocities, contributes to erosion and sedimentation, changes the natural hydrologic patterns, destroys aquatic habitat, elevates aquatic pollutant concentrations and loadings, overtaxes the carrying capacity of streams and storm sewers, greatly increases the cost of public facilities to carry and control stormwater, undermines floodplain management and flood control efforts in downstream communities, reduces groundwater recharge, and threatens public health and safety.
- B. A comprehensive program of stormwater management, including reasonable regulation of development and activities causing accelerated erosion and loss of natural infiltration, is fundamental to the public health, safety and welfare and the protection of the people of the municipality and all of the people of the Commonwealth, their resources and the environment.
- C. Stormwater can be an important resource by providing groundwater recharge for water supplies and baseflow of streams, which also protects and maintains surface water quality.
- D. Public education on the control of pollution from stormwater is an essential component in successfully addressing stormwater.
- E.* 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).
- F. Non-stormwater discharges to municipal separate storm sewer systems can contribute to pollution of waters of the Commonwealth by the municipality.

*Throughout the Ordinance, these provisions are from the DEP Guidance on MS4 Ordinance Provisions and are not required for municipalities not subject to the NPDES Phase II regulations.

SECTION C-103. PURPOSE

The purpose of this Ordinance is to promote the public health, safety and welfare within the Bushkill Creek Watershed by minimizing the damages and maximizing the benefits described in Section C-102 of this Ordinance by provisions designed to:

- A. Manage stormwater runoff impacts at their source by regulating activities which cause such problems.
- B. Utilize and preserve the desirable existing natural drainage systems.
- C. Encourage infiltration of stormwater, where appropriate, to maintain groundwater recharge, to prevent degradation of surface and groundwater quality and to otherwise protect water resources.
- D. Maintain the existing flows and quality of streams and watercourses in the municipality and the Commonwealth.
- E. Preserve and restore the flood carrying capacity of streams.
- F. Provide for proper maintenance of all permanent stormwater management BMPs that are implemented in the municipality.
- G. Provide review procedures and performance standards for stormwater planning, design and management.
- H. Manage stormwater impacts close to the runoff source which requires a minimum of structures and relies on natural processes.
- I. Meet legal water quality requirements under state law, including regulations at 25 Pa. Code Chapter 93.4a to protect and maintain "existing uses" and maintain the level of water quality to support those uses in all streams and to protect and maintain water quality in "special protection" streams.
- J. Prevent scour and erosion of streambanks and stream beds.
- K.* Provide standards to meet the NPDES permit requirements.

SECTION C-104. STATUTORY AUTHORITY

The municipality is empowered to regulate these activities by the authority of the Act of October 4, 1978, P.L. 864 (Act 167), 32 P.S. Section 680.1, et seq., as amended, the "Stormwater Management Act" and the "Borough Code", Act of February 1, 1966, P.L. 1656, No. 581.

SECTION C-105. APPLICABILITY

This Ordinance shall only apply to those areas of the municipality which are located within the Bushkill Creek Watershed as delineated on an official map available for inspection at the municipal office. A map of the Bushkill Creek Watershed at a reduced scale is included in Appendix C-A for general reference.

The following activities are defined as Regulated Activities and shall be governed by this Ordinance:

- A. Land development.
- B. Subdivision.
- C. Construction of new or additional impervious surfaces (driveways, parking lots, etc.).
- D. Construction of new buildings or additions to existing buildings.
- E. Diversion or piping of any natural or man-made stream channel.
- F. Installation of stormwater systems or appurtenances thereto.
- G.* Regulated Earth Disturbance Activities.

SECTION C-106. EXEMPTIONS

- A. Impervious Cover - Any proposed Regulated Activity, except those defined in Section C-105.E. and 105.F., which would create 10,000 square feet or less of additional impervious cover is exempt from the Drainage Plan preparation provisions of this Ordinance. All of the impervious cover added incrementally to a site above the initial 10,000 square feet shall be subject to the Drainage Plan preparation provisions of this Ordinance. If a site has previously received an exemption and is proposing additional development such that the total impervious cover on the site exceeds 10,000 square feet, the total impervious cover on the site proposed since the original ordinance date must meet the provisions of this Ordinance.
 - 1. The date of the Municipal Ordinance adoption of the original Bushkill Creek Act 167 Stormwater Management Ordinance (1992) shall be the starting point from which to consider tracts as "parent tracts" in which future subdivisions and respective impervious area computations shall be cumulatively considered.
 - 2. For development taking place in stages, the entire development plan must be used in determining conformance with these criteria.
 - 3. Additional impervious cover shall include, but not be limited to, additional indoor living spaces, decks, patios, garages, driveways, storage sheds and similar structures, any roof, parking or driveway areas and any new streets and sidewalks constructed as part of or for the proposed Regulated Activity.
 - 4. Any additional areas proposed to initially be gravel, crushed stone, porous pavement, etc. shall be assumed to be impervious for the purposes of comparison to the exemption criteria. Any existing gravel, crushed stone or hard packed soil areas on a site shall be considered as pervious cover for the purpose of exemption evaluation.
- B. Prior Drainage Plan Approval - Any Regulated Activity for which a Drainage Plan was previously prepared as part of a subdivision or land development proposal that received preliminary plan approval from the municipality prior to the effective date of this Ordinance is exempt from the Drainage Plan preparation provisions of this Ordinance, except as cited in Section C-106.C., provided that the approved Drainage Plan included design of stormwater facilities to control runoff from the site currently proposed for Regulated Activities consistent with ordinance provisions in effect at the time of approval and the approval has not lapsed

under the Municipalities Planning Code. If significant revisions are made to the Drainage Plan after both the preliminary plan approval and the effective date of this Ordinance, preparation of a new Drainage Plan, subject to the provisions of this Ordinance, shall be required. Significant revisions would include a change in control methods or techniques, relocation or redesign of control measures or changes necessary because soil or other conditions are not as stated on the original Drainage Plan.

- C. These exemptions shall not relieve the applicant from implementing such measures as are necessary to protect health, safety, property, and State Water Quality Requirements. These measures include adequate and safe conveyance of stormwater on the site and as it leaves the site. These exemptions do not relieve the applicant from the responsibility to secure required permits or approvals for activities regulated by any other applicable code, rule, act or ordinance.
- D. No exemptions shall be provided for regulated activities as defined in Sections C-105.E. and C-105.F.
- E. All lands owned by the Borough of Nazareth and the Nazareth Borough Municipal Authority.

SECTION C-107. REPEALER

Any ordinance of the municipality inconsistent with any of the provisions of this Ordinance is hereby repealed to the extent of the inconsistency only.

SECTION C-108. SEVERABILITY

Should any section or provision of this Ordinance be declared invalid by a court of competent jurisdiction, such decision shall not affect the validity of any of the remaining provisions of this Ordinance.

SECTION C-109. COMPATIBILITY WITH OTHER ORDINANCE REQUIREMENTS

Approvals issued pursuant to this Ordinance do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other applicable code, rule, act or ordinance.

SECTION C-110. DUTY OF PERSONS ENGAGED IN THE DEVELOPMENT OF LAND

Notwithstanding any provisions of this Ordinance, including exemption and waiver provisions, 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 to manage the rate, volume, direction and quality of resulting stormwater runoff in a manner which otherwise adequately protects health and property from possible injury.

ARTICLE 2 DEFINITIONS

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

- A. Words used in the present tense include the future tense; the singular number includes the plural, and the plural number includes the singular; words of masculine gender include feminine gender; and words of feminine gender include masculine gender.
- B. The word "includes" or "including" shall not limit the term to the specific example but is intended to extend its meaning to all other instances of like kind and character.
- C. The words "shall" and "must" are mandatory; the words "may" and "should" are permissive.

Accelerated Erosion - The removal of the surface of the land through the combined action of human activities and natural processes, at a rate greater than would occur because of the natural process alone.

Best Management Practice (BMP) - Activities, facilities, measures or procedures used to manage stormwater quantity and quality impacts from the Regulated Activities listed in Section C-105, to meet State Water Quality Requirements, to promote groundwater recharge and to otherwise meet the purposes of this Ordinance.

Best Management Practice Operations and Maintenance Plan -- Documentation, included as part of a Drainage plan, detailing the proposed BMPs, how they will be operated and maintained and who will be responsible.

Bioretention - Densely vegetated, depressed features that store stormwater and filter it through vegetation, mulch, planting soil, etc. Ultimately stormwater is evapotranspired, infiltrated, or discharged. Optimal bioretention areas mimic natural forest ecosystems in terms of species diversity, density, distribution, use of native plants, etc.

Buffer – (1) Streamside Buffer - A zone of variable width located along a stream that is vegetated and is designed to filter pollutants from runoff.

(2) Special Geologic Feature Buffer - A required isolation distance from a special geologic feature to a proposed BMP needed to reduce the risk of sinkhole formation due to stormwater management activities.

Capture/Reuse - Stormwater management techniques such as cisterns and rain barrels which direct runoff into storage devices, surface or sub-surface, for later re-use, such as for irrigation of gardens and other planted areas. Because this stormwater is utilized and no pollutant discharge results, water quality performance is superior to other non-infiltration BMPs.

Carbonate Bedrock -- Rock consisting chiefly of carbonate minerals, such as limestone and dolomite; specifically a sedimentary rock composed of more than 50% by weight of carbonate minerals that underlies soil or other unconsolidated, superficial material.

Cistern - An underground reservoir or tank for storing rainwater.

Closed Depression - A distinctive bowl-shaped depression in the land surface. It is characterized by internal drainage, varying magnitude, and an unbroken ground surface.

Conservation District - The Northampton County Conservation District, as applicable.

Constructed Wetlands - Constructed wetlands are similar to wet ponds (see below) and consist of a basin which provides for necessary stormwater storage as well as a permanent pool or water level, planted with wetland vegetation. To be successful, constructed wetlands must have adequate natural hydrology (both runoff inputs as well as soils and water table which allow for maintenance of a

permanent pool of water). In these cases, the permanent pool must be designed carefully, usually with shallow edge benches, so that water levels are appropriate to support carefully selected wetland vegetation.

Culvert - A pipe, conduit or similar structure including appurtenant works which carries surface water.

Dam - An artificial barrier, together with its appurtenant works, constructed for the purpose of impounding or storing water or another fluid or semifluid or a refuse bank, fill or structure for highway, railroad or other purposes which does or may impound water or another fluid or semifluid.

DEP - The Pennsylvania Department of Environmental Protection (formerly the Pennsylvania Department of Environmental Resources).

Design Storm - The depth and time distribution of precipitation from a storm event measured in probability of occurrence (e.g., 50-yr. storm) and duration (e.g. 24-hour), and used in computing stormwater management control systems.

Detention Basin - A basin designed to retard stormwater runoff by temporarily storing the runoff and releasing it at the appropriate Release Rate.

Developer - A person, partnership, association, corporation or other entity, or any responsible person therein or agent thereof, that undertakes any Regulated Activity of this Ordinance.

Development Site - The specific tract of land for which a Regulated Activity is proposed.

Diffused Drainage - See Sheet Flow.

Drainage Easement - A right granted by a land owner to a grantee, allowing the use of private land for stormwater management purposes.

Drainage Plan - The documentation of the proposed stormwater quantity and quality management controls to be used for a given development site, including a BMP Operations and Maintenance Plan, the contents of which are established in Section C-403.

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 removal of soil particles by the action of water, wind, ice, or other geological agents.

Existing Uses - Those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards. (25 Pa. Code Chapter 93.1)

Fill - Man-made deposits of natural soils or rock products and waste materials.

Filter Strips - See Vegetated Buffers.

Freeboard - The incremental depth in a stormwater management structure, provided as a safety factor of design, above that required to convey the design runoff event.

Groundwater Recharge - Replenishment of existing natural underground water supplies.

Hardship Waiver Request - A written request for a waiver alleging that the provisions of this Ordinance inflict unnecessary hardship upon the applicant. Waivers from the water quality provisions of this Ordinance shall not be granted.

Hot Spot Land Uses - A Land Use or activity that generates higher concentrations of hydrocarbons, trace metals or other toxic substances than typically found in stormwater runoff. These land uses are listed in Section C-304.P.

Hydrologic Soil Group (HSG) - Soils are classified into four HSGs (A, B, C and D) to indicate the minimum infiltration rates, which are obtained for bare soil after prolonged wetting. The Natural Resources Conservation Service (NRCS) of the U.S. Department of Agriculture 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 permeable as the HSG varies from A to D.

Impervious Surface (Impervious Cover) - A surface which prevents the percolation of water into the ground.

Infiltration Practice - A practice designed to direct runoff into the ground, e.g. French drain, seepage pit, seepage trench or bioretention area.

Karst - A type of topography or landscape characterized by depressions, sinkholes, limestone towers and steep-sided hills, underground drainage and caves. Karst is usually formed on carbonate rocks, such as limestones or dolomites and sometimes gypsum.

Land Development - Any of the following activities: (i) The improvement of one lot or two or more contiguous lots, tracts or parcels of land for any purpose involving (a) a group of two or more residential or nonresidential buildings, whether proposed initially or cumulatively, or a single nonresidential building on a lot or lots regardless of the number of occupants or tenure; or (b) the division or allocation of land or space, whether initially or cumulatively, between or among two or more existing or prospective occupants by means of, or for the purpose of streets, common areas, leaseholds, condominiums, building groups or other features; (ii) a subdivision of land; and (iii) development in accordance with Section 503(1.1) of the Pennsylvania Municipalities Planning Code.

Loading Rate - The ratio of the land area draining to the system, as modified by the weighting factors in Section C-307.B., compared to the base area of the infiltration system.

Low Impact Development - A development approach that promotes practices that will minimize post-development runoff rates and volumes thereby minimizing needs for artificial conveyance and storage facilities. Site design practices include preserving natural drainage features, minimizing impervious surface area, reducing the hydraulic connectivity of impervious surfaces, and protecting natural depression storage.

"Local" Runoff Conveyance Facilities - Any natural channel or manmade conveyance system which has the purpose of transporting runoff from the site to the mainstem.

Mainstem (main channel) - Any stream segment or other conveyance used as a reach in the Bushkill Creek hydrologic model.

Manning Equation (Manning formula) - A method for calculation of velocity of flow (e.g. feet per second) and flow rate (e.g. cubic feet per second) in open channels based upon channel shape, roughness, depth of flow and slope. "Open channels" may include closed conduits so long as the flow is not under pressure.

Maryland Stormwater Design Manual - A stormwater design manual written by the Maryland Department of the Environment and the Center for Watershed Protection. As of January 2004, the Manual can be obtained through the following web site: www.mde.state.md.us.

Minimum Disturbance/Minimum Maintenance Practices (MD/MM) - A site design practice in which careful limits are placed on site clearance prior to development allowing for maximum retention of existing vegetation (woodlands and other), minimum disturbance and compaction of existing soil mantle and minimum site application of chemicals post-development. Typically, MD/MM includes disturbance setback criteria from buildings as well as related site improvements such as walkways, driveways, roadways, and any other improvements. These criteria may vary by community context as well as by type of development being proposed. Additionally, MD/MM also shall include provisions (e.g., deed restrictions, conservation easements) to protect these areas from future disturbance and from application of fertilizers, pesticides, and herbicides.

Municipality - Borough of Nazareth, Northampton County, Pennsylvania.

No Harm Option - The option of using a less restrictive runoff quantity control if it can be shown that adequate and safe runoff conveyance exists and that the less restrictive control would not adversely affect health, safety and property.

NPDES - National Pollutant Discharge Elimination System.

NRCS - Natural Resource Conservation Service - U.S. Department of Agriculture. (Formerly the Soil Conservation Service.)

Oil/Water Separator -- A structural mechanism designed to remove free oil and grease (and possibly solids) from stormwater runoff.

Outfall - "Point source" as described in 40 CFR § 122.2 at the point where the municipality's storm sewer system discharges to surface waters of the Commonwealth.

Owner - One with an interest in and often dominion over a property.

Peak Discharge - The maximum rate of flow of stormwater runoff at a given location and time resulting from a specified storm event.

Penn State Runoff Model (PSRM) - The computer-based hydrologic modeling technique adapted to each watershed for the Act 167 Plans.

Person - An individual, partnership, public or private association or corporation, or a governmental unit, public utility or other for or not for profit statutory entity or other legal entity whatsoever which is recognized by law as the subject of rights and duties.

Point Source - Any discernible, confined and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel or conduit from which stormwater is or may be discharged, as defined in State regulations at 25 Pa. Code § 92.1.

Preliminary Site Investigation - The determination of the depth to bedrock, the depth to the seasonal high water table and the soil permeability for a possible infiltration location on a site through the use of published data and on-site surveys. In carbonate bedrock areas, the location of special geologic features must also be determined along with the associated buffer distance to the possible infiltration area. See Appendix C-F.

Public Water Supplier - A person who owns or operates a public water system.

Public Water System - A system which provides water to the public for human consumption which has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. (See 25 Pa. Code Chapter 109)

Qualified Geotechnical Professional - A licensed professional geologist or a licensed professional engineer who has a background or expertise in geology or hydrogeology.

Rational Method - A method of peak runoff calculation using a standardized runoff coefficient (rational 'c'), acreage of tract and rainfall intensity determined by return period and by the time necessary for the entire tract to contribute runoff. The rational method formula is stated as follows: $Q = ciA$, where "Q" is the calculated peak flow rate in cubic feet per second, "c" is the dimensionless runoff coefficient (see Appendix C-B'), "i" is the rainfall intensity in inches per hour, and "A" is the area of the tract in acres.

Reach - Any of the natural or man-made runoff conveyance channels used for watershed runoff modeling purposes to connect the subareas and transport flows downstream.

Recharge Volume (Rev) - The portion of the water quality volume (WQv) used to maintain groundwater recharge rates at development sites. (See Section C-304.J)

Regulated Activities - Actions or proposed actions which impact upon proper management of stormwater runoff and which are governed by this Ordinance as specified in Section C-105.

Regulated Earth Disturbance Activities - Earth disturbance activity other than agricultural plowing or tilling of one acre or more with a point source discharge to surface waters or to the municipality's storm sewer system or earth disturbance activity of five acres or more regardless of the planned runoff. 'this includes earth disturbance on any portion of, part or during any stage of a larger common plan of' development.

Release Rate - The percentage of the pre-development peak rate of runoff for a development site to which the post-development peak rate of runoff must be controlled to avoid peak flow increases throughout the watershed.

Return Period - The average interval in years over which an event of a given magnitude can be expected to recur. For example, the twenty-five (25) year return period rainfall or runoff event would be expected to recur on the average once every twenty-five years.

Road Maintenance - Earth disturbance activities within the existing road cross-section such as grading and repairing existing unpaved road surfaces, cutting road banks, cleaning or clearing drainage ditches and other similar activities.

Runoff - That part of precipitation which flows over the land.

Sediment Traps/Catch Basin Sumps - A chamber which provides storage below the outlet in a storm inlet to collect sediment, debris and associated pollutants, typically requiring periodic clean out.

Seepage Pit/Seepage Trench - An area of excavated earth filled with loose stone or similar material and into which surface water is directed for infiltration into the ground.

Separate Storm Sewer System - A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains) primarily used for collecting and conveying stormwater runoff.

Sheet Flow - Stormwater runoff flowing in a thin layer over the ground surface.

Soil-Cover-Complex Method - A method of runoff computation developed by NRCS which is based upon relating soil type and land use/cover to a runoff-parameter called a Curve Number.

Special Geologic Features - Carbonate bedrock features, including but not limited to closed depressions, existing sinkholes, fracture traces, lineaments, joints, faults, caves and pinnacles and geologic contacts between carbonate and non-carbonate bedrock which may exist and must be identified on a site when stormwater management 13 BMPs are being considered.

Spill Prevention and Response Program - A program that identifies procedures for preventing and, as needed, cleaning up potential spills and makes such procedures known and the necessary equipment available to appropriate personnel.

State Water Quality Requirements - As defined under State regulations -- protection of designated and existing uses (See 25 Pa. Code Chapters 93 and 96)-including:

- A. Each stream segment in Pennsylvania has a "designated use," such as "cold water fishes" or "potable water supply," which are listed in Chapter 93. These uses must be protected and maintained, under State regulations.
- B. "Existing uses" are those attained as of November 1975, regardless whether they have been designated in Chapter 93. Regulated Earth Disturbance activities must be designed to protect and maintain existing uses 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.
- C. Water quality involves the chemical, biological and physical characteristics of surface water bodies. After Regulated Earth Disturbance activities are complete, these characteristics can be impacted by addition of pollutants such as sediment, and changes in habitat through increased flow volumes and/or rates as a result of changes in land surface area from those activities. Therefore, permanent discharges to surface waters must be managed to protect the stream bank, streambed and structural integrity of the waterway, to prevent these impacts.

Storage Indication Method - A method of routing or moving an inflow hydrograph through a reservoir or detention structure. The method solves the mass conservation equation to determine an outflow hydrograph as it leaves the storage facility.

Storm Drainage Problem Areas - Areas which lack adequate stormwater collection and/or conveyance facilities and which present a hazard to persons or property.

Storm Sewer - A system of pipes or other conduits which carries intercepted surface runoff, street water and other wash waters, or drainage, but excludes domestic sewage and industrial wastes.

Stormwater -The surface runoff generated by precipitation reaching the ground surface.

Stormwater Filters - Any number of structural mechanisms such as multi-chamber catch basins, sand/peat filters, sand filters, and so forth which are installed to intercept stormwater flow and remove pollutants prior to discharge. Typically, these systems require periodic maintenance and clean out.

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

Stream - A watercourse.

Subarea - The smallest unit of watershed breakdown for hydrologic modeling purposes for which the runoff control criteria have been established in the Stormwater Management Plan.

Subdivision - The division or redivision of a lot, tract or parcel of land by any means into two or more lots, tracts, parcels or other divisions of land including changes in existing lot lines for the purpose, whether immediate or future, of lease, partition by the court for distribution to heirs or devisees, transfer of ownership or building or lot development; provided, however, that the subdivision by lease of land for agricultural purposes into parcels of more than ten (10) acres, not involving any new street or easement of access or any residential dwelling, shall be exempted.

Surface Waters of the 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 water, or parts thereof, whether natural or artificial, within or on the boundaries of this Commonwealth.

Swale - A low-lying stretch of land which gathers or carries surface water runoff. See also Vegetated Swale.

Technical Best Management Practice Manual & Infiltration Feasibility Report, November 2002 - The report written by Cahill Associates that addresses the feasibility of infiltration in carbonate bedrock areas in the Bushkill Creek Watershed. The report is available at the LVPC offices.

Trash/Debris Collectors - Racks, screens or other similar devices installed in a storm drainage system to capture coarse pollutants (trash, leaves, etc.).

Vegetated Buffers - Gently sloping areas that convey stormwater as sheet flow over a broad, densely vegetated earthen area, possibly coupled with the use of level spreading devices. Vegetated buffers should be situated on minimally disturbed soils, have low-flow velocities and extended residence times.

Vegetated Roofs - Vegetated systems installed on roofs that generally consist of a waterproof layer, a root-barrier, drainage layer (optional), growth media, and suitable vegetation. Vegetated roofs store and eventually evapotranspire the collected rooftop rainfall; overflows may be provided for larger storms.

Vegetated Swales - (1) Vegetated earthen channels designed to convey stormwater. These swales are not considered to be water quality BMPs.

(2) Broad, shallow, densely vegetated, earthen channels designed to treat stormwater while slowly infiltrating, evapotranspiring, and conveying it. Swales should be gently sloping with low flow velocities to prevent erosion. check dams may be added to enhance performance.

Water Quality Inserts - Any number of commercially available devices that are inserted into storm inlets to capture sediment, oil, grease, metals, trash, debris, etc.

Water Quality Volume (WQv) - The volume needed to capture and treat ninety (90%) percent of the average annual rainfall volume. (See Section C-304.B)

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

Watershed - The entire region or area drained by a river or other body of water, whether natural or artificial.

Wet Detention Ponds - A basin that provides for necessary stormwater storage as well as a permanent pool of water. To be successful, wet ponds must have adequate natural hydrology (both runoff inputs as well as soils and water table which allow for maintenance of a permanent pool of water) and must be able to support a healthy aquatic community so as to avoid creation of mosquito and other health and nuisance problems.

ARTICLE 3 STORMWATER MANAGEMENT REQUIREMENTS

SECTION C-301. GENERAL REQUIREMENTS

- A. All Regulated Activities in the municipality shall be subject to the stormwater management requirements of this Ordinance.
- B. Storm drainage systems shall be provided to permit unimpeded flow in natural watercourses except as modified by stormwater detention facilities, recharge facilities, water quality facilities, pipe systems or open channels consistent with this Ordinance.
- C. The existing locations of concentrated drainage discharge onto adjacent property shall not be altered without written approval of the affected property owners.
- D. Areas of existing diffused drainage discharge onto adjacent property shall be managed such that, at minimum, the peak diffused flow does not increase in the general direction of discharge, except as otherwise provided in this Ordinance. If diffused flow is proposed to be concentrated and discharged onto adjacent property, the developer must document that there are adequate downstream conveyance facilities to safely transport the concentrated discharge to the point of pre-development flow concentration, to the stream reach or otherwise prove that no harm will result from the concentrated discharge. Areas of existing diffused drainage discharge shall be subject to any applicable release rate criteria in the general direction of existing discharge whether they are proposed to be concentrated or maintained as diffused drainage areas.
- E. Where a site is traversed by watercourses other than those for which a 100-year floodplain is defined by the municipality, there shall be provided drainage easements conforming substantially with the line of such watercourses. The width of any easement shall be adequate to provide for unimpeded flow of storm runoff based on calculations made in conformance with Section C-307 for the 100-year return period runoff and to provide a freeboard allowance of one-half (0.5) foot above the design water surface level. The terms of the easement shall prohibit excavation, the placing of fill or structures, and any alterations which may adversely affect the flow of stormwater within any portion of the easement- Also, periodic maintenance of the easement to ensure proper runoff conveyance shall be required. Watercourses for which the 100-year floodplain is formally defined are subject to the applicable Municipal floodplain regulations.
- F. When it can be shown that, due to topographic conditions, natural drainage swales on the site cannot adequately provide for drainage, open channels may be constructed conforming substantially to the line and grade of such natural drainage swales. Capacities of open channels shall be calculated using the Manning Equation.
- G. Post-construction BMPs shall be designed, installed, operated and maintained to meet the requirements of the Clean Streams Law and implementing regulations, including the established practices in 25 Pa. Code Chapter 102 and the specifications of this ordinance as to prevent accelerated erosion in watercourse channels and at all points of discharge.

- H. No Earth Disturbance activities associated with any Regulated Activities shall commence until approval by the municipality of a plan which demonstrates compliance with the requirements of this Ordinance.
- I. Techniques described in Appendix C-E (Low Impact Development) of this Ordinance are encouraged because they reduce the costs of complying with the requirements of this Ordinance and the State Water Quality Requirements.
- J. Infiltration for stormwater management is encouraged where soils and geology permit, consistent with the provisions of this Ordinance and, where appropriate, the Recommendation Chart for Infiltration Stormwater Management BMPs in Carbonate Bedrock in Appendix C-C.

SECTION C-302. PERMIT REQUIREMENTS BY OTHER GOVERNMENT ENTITIES

The following permit requirements apply to certain Regulated and Earth Disturbance activities and must be met prior to commencement of Regulated and Earth Disturbance activities, as applicable:

- 1. All Regulated and Earth Disturbance activities subject to permit requirements by DEP under regulations at 25 Pa. Code Chapter 102.
- 2. Work within natural drainageways subject to permit by DEP under 25 Pa. Code Chapter 102.
- 3. Any stormwater management facility that would be located in or adjacent to surface waters of the Commonwealth, including wetlands, subject to permit by DEP under 25 Pa. Code Chapter 105.
- 4. Any stormwater management facility that would be located on a State highway right-of-way or require access from a State highway shall be subject to approval by the Pennsylvania Department of Transportation (PENNDOT).
- 5. Culverts, bridges, storm sewers or any other facilities which must pass or convey flows from the tributary area and any facility which may constitute a dam subject to permit by DEP under 25 Pa. Code Chapter 105.

SECTION C-303. EROSION AND SEDIMENT CONTROL. DURING REGULATED EARTH DISTURBANCE ACTIVITIES

- A. No Regulated Earth Disturbance activities within the municipality shall commence until approval by the municipality of an Erosion and Sediment Control Plan for Construction activities. Written approval by DIP or a delegated County Conservation District shall satisfy this requirement.
- B. An Erosion and Sediment Control Plan is required by DEP regulations for any Earth Disturbance activity of 5,000 square feet or more under Pa. Code § 102.4(b).
- C. A DEP NPDES Stormwater Discharges Associated with Construction Activities Permit is required to Regulated Earth Disturbance activities under Pa. Code Chapter 92.

- D. Evidence of any necessary permit(s) for Regulated Earth Disturbance Activities from the appropriate DEP regional office or County Conservation District must be provided to the municipality before the commencement of an Earth Disturbance activity.
- E. A copy of the Erosion and Sediment Control Plan and any permit, as required by DEP regulations, shall be available at the project site at all times.

SECTION C-304. POST CONSTRUCTION WATER QUALITY CRITERIA

- A. No Regulated Earth Disturbance activities within the municipality shall commence until approval by the municipality of a Drainage Plan which demonstrates compliance with this Ordinance. This Ordinance provides standards to meet NPDES Permit requirements associated with construction activities and MS4 permit requirements.
- B. The Water Quality Volume (WQv) shall be captured and treated. The WQv shall be calculated two ways. First, WQv shall be calculated using the following formula:

$$WQv = \frac{(c)(P)(A)}{12}$$

Where WQv = water quality volume in acre-feet
 c = Rational Method post-development runoff coefficient for the 2-year storm
 P = 1.25 inches
 A = Area in acres of proposed Regulated Activity

Second, the WQv shall be calculated as the difference in runoff volume from predevelopment to post-development for the 2-year return period storm. The effect of closed depressions on the site shall be considered in this calculation. The larger of these two calculated volumes shall be used as the WQv to be captured and treated, except that in no case shall the WQv be permitted to exceed 1.25-inches of runoff over the site area. This standard does not limit the volume of infiltration an applicant may propose for purposes of water quantity/peak rate control.

- C. The WQv shall be calculated for each post-development drainage direction on a site for sizing BMPs. Site areas having no impervious cover and no proposed disturbance during development may be excluded from the WQv calculations and do not require treatment.
- D. If an applicant is proposing to use a dry extended detention basin, wet pond, constructed wetland or other BMP that ponds water on the land surface and may receive direct sunlight, the discharge from that BMP must be treated by infiltration, a vegetated buffer, filter strip, bioretention, vegetated swale or other BMP that provides a thermal benefit to protect the High Quality waters of the Bushkill Creek from thermal impacts.
- E. The WQv for a site as a result of the Regulated Activities must either be treated with infiltration or two (2) acceptable BMPs such as those listed in Section C-304.O., except for minor areas on the periphery of the site that cannot reasonably be drained to an infiltration facility or other BMP.
- F. Infiltration BMPs shall not be constructed on fill unless the applicant demonstrates that the fill is stable and otherwise meets the infiltration BMP standards of this Ordinance..

- G. The applicant shall document the bedrock type(s) present on the site from published sources. Any apparent boundaries between carbonate and non-carbonate bedrock shall be verified through more detailed site evaluations by a qualified geotechnical professional.
- H. For each proposed Regulated Activity in the watershed where an applicant intends to use infiltration BMPs, the applicant shall conduct a Preliminary Site Investigation on the portion of the site that is judged to be the best candidate hydrogeologically for possible infiltration, including gathering data from published sources, a field inspection of the site, a minimum of one test pit and a minimum of two percolation tests, as outlined in Appendix C-F. This investigation will determine depth to bedrock, depth to the seasonal high water table, soil permeability and location of special geologic features, if applicable. This investigation may be done by a certified Sewage Enforcement Officer (SEO) except that the location(s) of special geologic features shall be verified by a qualified geotechnical professional.
- I. Sites where applicants intend to use infiltration BMPs must meet the following criteria:
- Depth to bedrock below the invert of the BMP greater than or equal to 2 feet
 - Depth to seasonal high water table below the invert of the BMP greater than or equal to 3 feet; except for infiltration of residential roof runoff where the seasonal high water table must be below the invert of the BMP. (If the depth to bedrock is between 2 and 3 feet and the evidence of the seasonal high water table is not found in the soil, no further testing to locate the depth to seasonal high water table is required.)
 - Soil permeability (as measured by the adapted 25 Pa. Code §73.15 percolation test in Appendix C-F) greater than or equal to 0.5 inches/hour and less than or equal to 12 inches per hour
 - Setback distances or buffers as follows:
 - 100 feet from water supply wells
 - 15 feet downgradient or 100 feet upgradient from building foundations; except for residential development where the required set back is 15 feet downgradient or 40 feet upgradient from building foundations.
 - 50 feet from septic system drainfields; except for residential development where the required setback is 25 feet from septic system drainfields.
 - 50 feet from a geologic contact with carbonate bedrock unless a Preliminary Site Investigation is done in the carbonate bedrock to show the absence of special geologic features within 50 feet of the proposed infiltration area.
 - 100 feet from the property line unless documentation is provided to show that all setbacks from wells, foundations and drainfields on neighboring properties will be met; except for one and two family residential dwellings where the required setback is 40 feet unless documentation is provided to show that all setbacks from existing or potential future wells, foundations and drainfields on neighboring properties will be met.
- J. For entirely non-carbonate sites, the Recharge Volume (Rev) shall be infiltrated unless the applicant demonstrates that it is infeasible to infiltrate the Rev for reasons of seasonal high

water table, permeability rate, soil depth or setback distances; or except as provided in Section C-304.U.

1. The Rev shall be calculated as follows:

$$\text{Rev} = (0.25) * (I) / 12$$

Where Rev = Recharge Volume in acre-feet

I = impervious area in areas

2. The Preliminary Site Investigation described in Section C-304.H is required and shall continue on different areas of the site until a potentially suitable infiltration location is found or the entire site is determined to be infeasible for infiltration. For infiltration areas that appear to be feasible based on the preliminary site investigation, the Additional Site Investigation and Testing as outlined in Appendix C-F shall be completed.
 3. If an Applicant proposed infiltration, the municipality may determine infiltration to be infeasible if there are known existing conditions or problems that may be worsened by the use of infiltration.
 4. The site must meet the conditions listed in Section C-304.I.
 5. If it is not feasible to infiltrate the full Rev, the applicant shall infiltrate that portion of the Rev that is feasible based on the site characteristics. If none of the Rev can be infiltrated, Rev shall be considered was part of the WQv and shall be captured and treated as described in Section C-304.O.
 6. If Rev is infiltrated, it may be subtracted from the WQv required to be captured and treated.
- K. In entirely carbonate areas where the applicant intends to use infiltration BMPs, in addition to the testing required in Section C-304.H., the Preliminary Site Investigation shall include an assessment of the remainder of the site for possible infiltration based on required isolation distances from special geologic features and the likely soil depth and permeability based on published data or other site data available. Where infiltration BMPs are proposed, the applicant shall conduct the Additional Site Investigation and Testing as outlined in Appendix C-F. The soil depth, percolation rate and proposed loading rate, each weighted as described in Section C-307, along with the buffer from special geologic features shall be compared to the Recommendation Chart for Infiltration Stormwater Management BMPs in Carbonate Bedrock in Appendix C-C to determine if the site is recommended for infiltration. If at any point in the Preliminary Site Investigation the data (e.g. location of Karst features on the site or the published soils data for the site) indicates that the entire site will not be recommended for infiltration based on the ordinance standards, then no further investigation is required. In addition to the recommendation from Appendix C-C, the conditions listed in Section C-304.I are required for infiltration in carbonate areas.

Applicants are encouraged to infiltrate the Rev, as calculated in Section C-304.J, but are not required to use infiltration BMPs on a carbonate site even if the site falls in the "Recommended" range on the chart in Appendix C-C. Any amount of volume infiltrated can be subtracted from the WQv to be treated by non-infiltration BMPs. If infiltration is not proposed, the WQv shall be treated by two acceptable BMPs, as specified in Section C-304.O.

- L. If a site has both carbonate and non-carbonate areas, the applicant shall investigate the ability of the non-carbonate portion of the site to fully meet this Ordinance to meet the requirements for REv for the whole site through infiltration. If that proves infeasible, infiltration in the carbonate area as described in Section C-304.K or two other non-infiltration BMPs as described in Section C-304.O must be used. No infiltration structure in the noncarbonate area shall be located within 50 feet of a boundary with carbonate bedrock, except when a Preliminary Site Investigation has been done showing the absence of special geologic features within 50 feet of the proposed infiltration area.
- M. If infiltration BMPs are proposed in carbonate areas, the post-development 2-year runoff volume leaving the site shall be 80% or more of the pre-development runoff volume for the carbonate portion of the site to prevent infiltration of volumes far in excess of the pre-development infiltration volume.
- N. Site areas proposed for infiltration shall be protected from disturbance and compaction except as necessary for construction of infiltration BMPs.
- O. If infiltration of the entire WQv is not proposed, the remainder of the WQv shall be treated by two acceptable BMPs in series for each discharge location. Sheet flow draining across a pervious area can be considered as one BMP. Sheet flow across impervious areas and concentrated flow shall flow through two BMPs. If sheet flow from an impervious area is to be drained across a pervious area as one BMP, the length of the pervious area must be equal to or greater than the length of impervious area. In no case, may the same BMP be employed consecutively to meet this requirement. Acceptable BMPs are listed below along with the recommended reference for design.

Best Management Practice	Design Reference^C
Bioretention ^A	4, 5, 11, 16
Capture/Reuse ^B	4, 14
Constructed Wetlands	4, 5, 8, 10, 16
Dry Extended Detention Ponds	4, 5, 8, 12, 18
Minimum Disturbance/Minimum Maintenance Practices	1, 9
Significant Reduction of Existing Impervious Cover	N/A
Stormwater Filters (sand, peat, compost, etc.) ^A	4, 5, 10, 16
Vegetated Buffers/Filter Strips	2, 3, 5, 11, 16, 17
Vegetated Roofs	4, 13
Vegetated Swales ^A	2, 3, 5, 11, 16, 17
Water Quality Inlets ^D	4, 7, 15, 16, 19
Wet Detention Ponds	4, 5, 6, 8

^AThis BMP could be designed with or without an infiltration component. If infiltration is proposed, the site and BMP will be subject to the testing and other infiltration requirements in this Ordinance.

^BIf this BMP is used to treat the entire WQv then it is the only BMP required because of this BMP's superior water quality performance.

^CSee table below.

^DWater Quality Inlets include such BMPs as Oil/Water Separators, Sediment Traps/Catch Basin Sumps, and Trash/Debris Collectors in Catch Basins.

Number	Design Reference Title
1	"Conservation Design for Stormwater Management—A Design Approach to Reduce Stormwater Impacts From Land Development and Achieve Multiple Objective Related to Land Use," Delaware Department of Natural Resources and Environmental Control, The Environmental Management Center of the Brandywine Conservancy, September 1997
2	"A Current Assessment of Urban Best Management Practices: Techniques for Reducing Nonpoint Source Pollution in the Coastal Zone," Schueler, T. R., Kumble, P. and Heraty, M., Metropolitan Washington Council of Governments, 1992.
3	"Design of Roadside Channels With Flexible Linings," Federal Highway Administration, Chen, Y. H., and Cotton, G. K., Hydraulic Engineering Circular 15, FHWA-IP-87-7, McLean, Virginia, 1988
4	"Draft Stormwater Best Management Practices Manual," Pennsylvania Department of Environmental Protection, January 2005
5	"Evaluation and Management of Highway Runoff Water Quality," Federal Highway Administration, FHWA-PD-96-032, Washington, D.C., 1996
6	"Evaporation Maps of the United States," U.S. Weather Bureau (now NOAA/National Weather Service) Technical Paper 37, Published by Department of Commerce, Washington, D.C., 1959
7	"Georgia Stormwater Manual," AMEC Earth and Environmental, Center for Watershed Protection, Debo and Associates, Jordan Jones and Goulding, Atlanta Regional Commission, Atlanta, Georgia, 2001
8	"Hydraulic Design of Highway Culverts," Federal Highway Administration, FHWA HDS 5, Washington, D.C., 1985 (revised May 2005)
9	"Low Impact Development Design Strategies <i>An Integrated Design Approach</i> ," Prince Georges County, Maryland Department of Environmental Resources, June 1999
10	"Maryland Stormwater Design Manual," Maryland Department of the Environment, Baltimore, Maryland, 2000
11	"Pennsylvania Handbook of Best Management Practices for Developing Areas," Pennsylvania Department of Environmental Protection, 1998
12	"Recommended Procedures for Act 167 Drainage Plan Design," LVPC, Revised 1997
13	"Roof Gardens History, Design, and Construction," Osmundson, Theodore. New York: W. W. Norton & Company, 1999
14	"The Texas Manual on Rainwater Harvesting," Texas Water Development Board, Austin, Texas, Third Edition, 2005

Number	Design Reference Title
15	"VDOT Manual of Practice for Stormwater Management," Virginia Transportation Research Council, Charlottesville, Virginia, 2004
16	"Virginia Stormwater Management Handbook," Virginia Department of Conservation and Recreation, Richmond, Virginia, 1999
17	"Water Resources Engineering," Mays, L. W., John Wiley & Sons, Inc., 2005
18	"Urban Hydrology for Small Watersheds," Technical Report 55, U.S. Department of Agriculture, Natural Resources Conservation Service, 1986
19	"U.S. EPA, Region 1 New England web site (as of August 2005) http://www.epa.gov/NE/assistance/ceitts/stormwater/techs/html

- P. Stormwater runoff from Hot Spot land uses shall be pre-treated. In no case, may the same BMP be employed consecutively to meet this requirement and the requirement in Section C-304.O. Acceptable methods of pre-treatment are listed below.

Hot Spot Land Use	Pre-treatment Method(s)
Vehicle Maintenance and Repair Facilities including Auto Parts Stores	-Water Quality Inlets -Use of Drip Pans and/or Dry Sweep Material Under Vehicles/Equipment -Use of Absorbent Devices to Reduce Liquid Releases -Spill Prevention and Response Program
Vehicle Fueling Stations	-Water Quality Inlets -Spill Prevention and Response Program
Storage Areas for Public Works	-Water Quality Inlets -Use of Drip Pans and/or Dry Sweep Material Under Vehicles/Equipment -Use of Absorbent Devices to Reduce Liquid Releases -Spill Prevention and Response Program -Diversion of Stormwater away from Potential Contamination Areas
Outdoor Storage of Liquids	-Spill Prevention and Response Program
Commercial Nursery Operations	-Vegetated Swales/Filter Strips -Constructed Wetlands -Stormwater Collection and Reuse
Salvage Yards and Recycling Facilities*	-BMPs that are a part of a Stormwater Pollution Prevention Plan under an NPDES Permit
Fleet Storage Yards and Vehicle Cleaning Facilities*	-BMPs that are a part of a Stormwater Pollution Prevention Plan under an NPDES Permit

Hot Spot Land Use	Pre-treatment Method(s)
Facilities that Store or Generate Regulated Substances*	-BMPs that are a part of a Stormwater Pollution Prevention Plan under an NPDES Permit
Marinas*	-BMPs that are a part of a Stormwater Pollution Prevention Plan under an NPDES Permit
Certain Industrial Uses (listed under NPDES)*	-BMPs that are a part of a Stormwater Pollution Prevention Plan under an NPDES Permit

*Regulated under the NPDES Stormwater Program

Design references for the pre-treatment methods, as necessary, are listed below. If the applicant can demonstrate to the satisfaction of the municipality that the proposed land use is not a Hot , then the pre-treatment requirement would not apply.

Pre-treatment Method	Design Reference^A
Constructed Wetlands	4, 5, 8, 10, 16
Diversion of Stormwater away from Potential Contamination Areas	4, 11
Stormwater Collection and Reuse (especially for irrigation)	4, 14
Stormwater Filters (Sand, Peat, Compost, etc.)	4, 5, 10, 16
Vegetated Swales	2, 3, 5, 11, 16, 17
Water Quality Inlets	4, 7, 15, 16, 19

^AThese numbers refer to the Design Reference Title Chart in Section C-304.O above.

- Q. The use of infiltration BMPs is prohibited on Hot Spot land use areas.
- R. Stormwater infiltration BMPs shall not be placed in or on a special geologic feature(s). Additionally, stormwater runoff shall not be discharged into existing onsite sinkholes.
- S. Applicants shall request, in writing, Public Water Suppliers to provide the Zone I Wellhead Protection radius, as calculated by the method outlined in the Pennsylvania Department of Environmental Protection Wellhead Protection regulations, for any public water supply well within 400 feet of the site. In addition to the setback distances specified in Section C-304.1. and 304J., infiltration is prohibited in the Zone I radius as defined and substantiated by the Public Water Supplier in writing. If the applicant does not receive a response from the Public Water Supplier, the Zone I radius is assumed to be 100 feet.
- T. The volume and rate of the net increase in stormwater runoff from the Regulated Activities must be managed to prevent the physical degradation of receiving waters from such effects as scour and stream bank destabilization, to satisfy State Water Quality Requirements, by controlling the 2-year post-development runoff to a 30% Release Rate.
- U. The municipality may, after consultation with DEP, approve alternative methods for meeting the State Water Quality Requirements other than those in this Section, provided that they meet the minimum requirements of and do not conflict with State law including but not limited to the Clean Streams Law.

SECTION C-305. STORMWATER MANAGEMENT DISTRICTS

- A. Mapping of Stormwater Management Districts - To implement the provisions of the Bushkill Creek Watershed Stormwater Management Plan, the municipality is hereby divided into Stormwater Management Districts consistent with the Bushkill Creek Release Rate Map presented in the Plan. The boundaries of the Stormwater Management Districts are shown on an official map which is available for inspection at the municipal office. A copy of the official map at a reduced scale is included in Appendix C-A for general reference.
- B. Description of Stormwater Management Districts - Two types of Stormwater Management Districts may be applicable to the municipality, namely Conditional No Detention Districts and Dual Release Rate Districts as described below.
 - 1. Conditional No Detention Districts - Within these districts, the capacity of the "local" runoff conveyance facilities (as defined in Article 2) must be calculated to determine if adequate capacity exists. For this determination, the developer must calculate peak flows assuming that the site is developed as proposed and that the remainder of the local watershed is in the existing condition. The developer must also calculate peak flows assuming that the entire local watershed is developed per current zoning and that all new development would use the runoff controls specified by this Ordinance. The larger of the two peak flows calculated will be used in determining if adequate capacity exists. If adequate capacity exists to safely transport runoff from the site to the main channel (as defined in Article 2), these watershed areas may discharge postdevelopment peak runoff without detention facilities. If the capacity calculations show that the "local" runoff conveyance facilities lack adequate capacity, the developer shall either use a 100% release rate control or provide increased capacity of downstream elements to convey increased peak flows consistent with Section C-306.P. Any capacity improvements must be designed to convey runoff from development of all areas tributary to the improvement consistent with the capacity criteria specified in Section C-306.D. By definition, a storm drainage problem area associated with the "local" runoff conveyance facilities indicates that adequate capacity does not exist. Sites in these districts are still required to meet all of the water quality requirements in Section C-304.
 - 2. Dual Release Rate Districts - Within this district, the 2-year post-development peak runoff must be controlled to 30% of the pre-development 2-year runoff peak. Further, the 10-year, 25-year and 100-year post-development peak runoff must be controlled to the stated percentage of the pre-development peak. Release Rates associated with the 10- through 100-year events vary from 50% to 100% depending upon location in the watershed.

SECTION C-306. STORMWATER MANAGEMENT DISTRICT IMPLEMENTATION PROVISIONS

- A. Applicants shall provide a comparative pre- and post-construction stormwater management hydrograph analysis for each direction of discharge and for the site overall to demonstrate compliance with the provisions of this Ordinance.
- B. Any stormwater management controls required by this Ordinance and subject to a dual release rate criteria shall meet the applicable release rate criteria for each of the 2-, 10-, 25- and 100-year return period runoff events consistent with the calculation methodology specified in Section C-307.

- C. The exact location of the Stormwater Management District boundaries as they apply to a given development site shall be determined by mapping the boundaries using the two-foot topographic contours provided as part of the Drainage Plan. The District boundaries as originally drawn coincide with topographic divides or, in certain instances, are drawn from the intersection of the watercourse and a physical feature such as the confluence with another watercourse or a potential flow obstruction (e.g. road, culvert, bridge, etc.). The physical feature is the downstream limit of the subarea and the subarea boundary is drawn from that point up slope to each topographic divide along the path perpendicular to the contour lines.
- D. Any downstream capacity analysis conducted in accordance with this Ordinance shall use the following criteria for determining adequacy for accepting increased peak flow rates:
1. Natural or man-made channels or swales must be able to convey the increased runoff associated with a 2-year return period event within their banks at velocities consistent with protection of the channels from erosion.
 2. Natural or man-made channels or swales must be able to convey the increased 25-year return period runoff without creating any hazard to persons or property.
 3. Culverts, bridges, storm sewers or any other facilities which must pass or convey flows from the tributary area must be designed in accordance with DEP Chapter 105 regulations (if applicable) and, at minimum, pass the increased 25-year return period runoff.
- E. For a proposed development site located within one release rate category subarea, the total runoff from the site shall meet the applicable release rate criteria. For development sites with multiple directions of runoff discharge, individual drainage directions may be designed for up to a 100% release rate so long as the total runoff from the site is controlled to the applicable release rate.
- F. For a proposed development site located within two or more release category subareas, the peak discharge rate from any subarea shall be the pre-development peak discharge for that subarea multiplied by the applicable release rate. The calculated peak discharges shall apply regardless of whether the grading plan changes the drainage area by subarea. An exception to the above may be granted if discharges from multiple subareas re-combine in proximity to the site. In this case, peak discharge in any direction may be a 100% release rate provided that the overall site discharge meets the weighted average release rate.
- G. For a proposed development site located partially within a release rate category subarea and partially within a conditional no detention subarea, the size of the pre-development drainage area on a site may not be changed post-development to create potentially adverse conditions on downstream properties except as part of a "No Harm" or Hardship waiver procedure.
- H. No portion of a site may be regraded between the Bushkill Creek Watershed and any adjacent watershed except as part of a "No Harm" or Hardship Waiver procedure.
- I. Within a release rate category area, for a proposed development site which has areas which drain to a closed depression(s), the design release from the site will be the lesser of (a) the applicable release rate flow assuming no closed depression(s) or (b) the existing peak flow actually leaving the site. In cases where (b) would result in an unreasonably small design release, the design discharge of less than or equal to the release rate will be determined by the available downstream conveyance capacity to the main channel calculated using Section C-306.D. and the minimum orifice criteria.

- J. Off-site areas which drain through a proposed development site are not subject to release rate criteria when determining allowable peak runoff rates. However; on-site drainage facilities shall be designed to safely convey off-site flows through the development site using the capacity criteria in Section C-306.D. and the detention criteria in Section C-307.
- K. For development sites proposed to take place in phases, all detention ponds shall be designed to meet the applicable release rate(s) applied to all site areas tributary to the proposed pond discharge direction. All site tributary areas will be assumed as developed, regardless of whether all site tributary acres are proposed for development at that time. An exception shall be sites with multiple detention ponds in series where only the downstream pond must be designed to the stated release rate.
- L. Where the site area to be impacted by a proposed development activity differs significantly from the total site area, only the proposed impact area shall be subject to the release rate criteria. The impact area includes any proposed cover or grading changes.
- M. Development proposals which, through groundwater recharge or other means, do not increase either the rate or volume of runoff discharged from the site compared to pre-development are not subject to the release rate provisions of this Ordinance.
- N. "No Harm" Water Quantity Option - For any proposed development site not located in a conditional no detention district, the developer has the option of using a less restrictive runoff control (including no detention) if the developer can prove that special circumstances exist for the proposed development site and that "no harm" would be caused by discharging at a higher runoff rate than that specified by the Plan. Special circumstances are defined as any hydrologic or hydraulic aspects of the development itself not specifically considered in the development of the Plan runoff control strategy. Proof of "no harm" would have to be shown from the development site through the remainder of the downstream drainage network to the confluence of the creek with the Delaware River- Proof of "no harm" must be shown using the capacity criteria specified in Section C-306.D. if downstream capacity analysis is a part of the "no harm" justification.

Attempts to prove "no harm" based upon downstream peak flow versus capacity analysis shall be governed by the following provisions:

1. The peak flow values to be used for downstream areas for the design return period storms (2-, 10-, 25- and 100-year) shall be the values from the calibrated Penn State Runoff Model for the Bushkill Creek Watershed or as calculated by an applicant using an alternate method acceptable to the municipality. The flow values from the Penn State Runoff Model would be supplied to the developer by the municipality upon request.
2. Any available capacity in the downstream conveyance system as documented by a developer may be used by the developer only in proportion to his development site acreage relative to the total upstream undeveloped acreage from the identified capacity (i.e. if his site is 10% of the upstream undeveloped acreage, he may use up to 10% of the documented downstream available capacity).
3. Developer-proposed runoff controls which would generate increased peak flow rates at storm drainage problem areas would, by definition, be precluded from successful attempts to prove "no harm", except in conjunction with proposed capacity improvements for the problem areas consistent with Section C-306.P.

Any "no harm" justifications shall be submitted by the developer as part of the Drainage Plan submission per Article 4. Developers submitting "no harm" justifications must still meet all of the water quality requirements in Section C-304.

- O. Regional Detention Alternatives - For certain areas within the study area, it may be more cost-effective to provide one control facility for more than one development site than to provide an individual control facility for each development site. The initiative and funding for any regional runoff control alternatives are the responsibility of prospective developers. The design of any regional control basins must incorporate reasonable development of the entire upstream watershed. The peak outflow of a regional basin would be determined based on the required release rate at the point of discharge.
- P. Capacity Improvements - In certain instances, primarily within the conditional no detention areas, local drainage conditions may dictate more stringent levels of runoff control than those based upon protection of the entire watershed. In these instances, if the developer could prove that it would be feasible to provide capacity improvements to relieve the capacity deficiency in the local drainage network, then the capacity improvements could be provided by the developer in lieu of runoff controls on the development site. Peak flow calculations shall be done assuming that the local watershed is in the existing condition and then assuming that the local watershed is developed per current zoning and using the specified runoff controls. Any capacity improvements would be designed using the larger of the above peak flows and the capacity criteria specified in Section C-306.D. All new development in the entire subarea(s) within which the proposed development site is located shall be assumed to implement the developer's proposed discharge control, if any.

Capacity improvements may also be provided as necessary to implement any regional detention alternatives or to implement a modified "no harm" option which proposes specific improvements to provide that a less stringent discharge control would not create any harm downstream.

SECTION C-307. CALCULATION METHODOLOGY

- A. Stormwater runoff from all development sites shall be calculated using either the rational method or the soil-cover-complex methodology.
- B. Infiltration BMP loading rate percentages in the Recommendation Chart for Infiltration Stormwater Management BMPs in Carbonate Bedrock in Appendix C-C shall be calculated as follows:

$$\left(\frac{\text{Area Tributary to infiltration BMP}}{\text{Base area of infiltration BMP}} \right) * 100\%$$

The area tributary to the infiltration BMP shall be weighted as follows:

All disturbed areas to be made impervious:	weight at 100%
All disturbed areas to be made pervious:	weight at 50%
All undisturbed pervious areas:	weight at 0%
All existing impervious areas:	weight at 100%

- C. Soil thickness is to be measured from the bottom of any proposed infiltration system. The effective soil thickness in the Recommendation Chart for Infiltration Stormwater Management BMPs in Carbonate Bedrock in Appendix C-C is the measured soil thickness multiplied by

the thickness factor based on soil permeability (as measured by the adapted 25 PA Code §73.15 percolation test in Appendix C-F), as follows:

PERMEABILITY RANGE*	THICKNESS FACTOR
6.0 to 12.0 inches/hour	0.8
2.0 to 6.0 inches/hour	1.0
1.0 to 2.0 inches/hour	1.4
0.75 to 1.0 inches/hour	1.2
0.5 to 0.75 inches/hour	1.0

*If the permeability rate (as measured by the adapted 25 PA Code §73.15 percolation test in Appendix C-F) falls on a break between two thickness factors, the smaller thickness factor shall be used.

Sites with soil permeability greater than 12.0 in./hr. or less than 0.5 in./hr., as measured by the adapted 25 PA Code §73.15 percolation test in Appendix C-F, are not recommended for infiltration.

- D. The design of any detention basin intended to meet the requirements of this Ordinance shall be verified by routing the design storm hydrograph through the proposed basin using the storage indication method or other methodology demonstrated to be more appropriate. For basins designed using the rational method technique, the design hydrograph for routing shall be either the Universal Rational Hydrograph or the modified rational method trapezoidal hydrograph which maximizes detention volume. Use of the modified rational hydrograph shall be consistent with the procedure described in Section "PIPE.RAT" of the Users' Manual for the Penn State Urban Hydrograph Method (1987).
- E. BMPs designed to store or infiltrate runoff and discharge to surface runoff or pipe flow shall be routed using the storage indication method.
- F. BMPs designed to store or infiltrate runoff and discharge to surface runoff or pipe flow shall provide storage volume for the full WQv below the lowest outlet invert.
- G. Wet Detention Ponds designed to have a permanent pool for the WQv shall assume that the permanent pool volume below the primary outlet is full at the beginning of design event routing for the purposes of evaluating peak outflows.
- H. All stormwater detention facilities shall provide a minimum 1.0 foot freeboard above the maximum pool elevation associated with the 2- through 25-year runoff events. A 0.5 foot freeboard shall be provided above the maximum pool elevation of the 100year runoff event. The freeboard shall be measured from the maximum pool elevation to the invert of the emergency spillway. The 2- through 100-year storm events shall be controlled by the primary outlet structure. An emergency spillway for each basin shall be designed to pass the 100-year return frequency storm peak basin inflow rate with a minimum 0.5 foot freeboard measured to the top of basin. The freeboard criteria shall be met considering any offsite areas tributary to the basin as developed, as applicable. If this detention facility is considered to be a dam as per DEP Chapter 105, the design of the facility must be consistent with the Chapter 105. regulations, and may be required to pass a storm greater than the 100-year event.
- I. The minimum circular orifice diameter for controlling discharge rates from detention facilities shall be three (3) inches. Designs where a lesser size orifice would be required to fully meet

release rates shall be acceptable provided that as much of the site runoff as practical is directed to the detention facilities. The minimum 3-inch diameter does not apply to the control of the WQv.

- J. Runoff calculations using the soil-cover-complex method shall use the Natural Resources Conservation Service Type II 24-hour rainfall distribution. The 24-hour rainfall depths for the various return periods to be used consistent with this Ordinance may be taken from NOAA Atlas 14, Volume 2 or the PennDOT Intensity - Duration -Frequency Field Manual ("PDT-IDF") (May 1986) for Region 4. The following values are taken from the PDT-IDF Field Manual:

<u>Return Period</u>	<u>24-Hour Rainfall Depth</u>
1-year	2.40 inches
2-year	3.00 inches
5-year	3.60 inches
10-year	4.56 inches
25-year	5.52 inches
50-year	6.48 inches
100-year	7.44 inches

A graphical and tabular presentation of the Type 11-24 hour distribution is included in Appendix C-B.

- K. Runoff calculations using the Rational Method shall use rainfall intensities consistent with appropriate times of concentration and return periods and NOAA Atlas 14, Volume 2 Version 2.1, 2004 or the Intensity-Duration-Frequency Curves as presented in Appendix C-B.
- L. Runoff Curve Numbers (CNs) to be used in the soil-cover-complex method shall be based upon the matrix presented in Appendix C-B.
- M. Runoff coefficients for use in the Rational Method shall be based upon the table presented in Appendix C-B.
- N. All time of concentration calculations shall use a segmental approach which may include one or all of the flow types below:
 1. Sheet Flow (overland flow) calculations shall use either the NRCS average velocity chart (Figure 3-1, Technical Release-55, 1975) or the modified kinematic wave travel time equation (equation 3-3, NRCS TR-55, June 1986). If using the modified kinematic wave travel time equation, the sheet flow length shall be limited to 50 feet for designs using the Rational Method and limited to 150 feet for designs using the Soil-Cover-Complex method.
 2. Shallow Concentrated Flow travel times shall be determined from the watercourse slope, type of surface and the velocity from Figure 3-1 of TR-55, June 1986.
 3. Open Channel Flow travel times shall be determined from velocities calculated by the Manning Equation. Bankfull flows shall be used for determining velocities. Manning 'n' values shall be based on the table presented in Appendix C-B.
 4. Pipe Flow travel times shall be determined from velocities calculated using the Manning Equation assuming full flow and the Manning 'n' values from Appendix C-B.

- O. If using the Rational Method, all pre-development calculations for a given discharge direction shall be based on a common time of concentration considering both on-site and any off-site drainage areas. If using the Rational Method, all post-development calculations for a given discharge direction shall be based on a common time of concentration considering both on-site and any off-site drainage areas.
- P. The Manning Equation shall be used to calculate the capacity of watercourses. Manning 'n' values used in the calculations shall be consistent with the table presented in Appendix C-B or other appropriate standard engineering 'n' value resources. Pipe capacities shall be determined by methods acceptable to the municipality.
- Q. The Pennsylvania DEP, Chapter 105, Rules and Regulations, apply to the construction, modification, operation or maintenance of both existing and proposed dams, water obstructions and encroachments throughout the watershed. Criteria for design and construction of stormwater management facilities according to this Ordinance may not be the same criteria that are used in the permitting of dams under the Dam Safety Program.

ARTICLE 4 DRAINAGE PLAN REQUIREMENTS

SECTION C-401. GENERAL REQUIREMENTS

For any of the Regulated Activities of this Ordinance, prior to the final approval of subdivision and/or land development plans, or the issuance of any permit, or the commencement of any Regulated Earth Disturbance activity, the owner, subdivider, developer or his agent shall submit a Drainage Plan and receive municipal approval of the Plan.

SECTION C-402. EXEMPTIONS

Exemptions from the Drainage Plan Requirements are as specified in Section C-106.

SECTION C-403. DRAINAGE PLAN CONTENTS

The following items shall be included in the Drainage Plan:

- A. General
 - 1. General description of project.
 - 2. General description of proposed permanent stormwater controls.
 - 3. The name and address of the project site, the name and address of the owner of the property and the name of the individual or firm preparing the Drainage Plan.
- B. Map(s) of the Project Area Showing:
 - 1. The location of the project relative to highways, municipalities or other identifiable landmarks.

2. Existing contours at intervals of two (2) feet. In areas of steep slopes (greater than 15%), five-foot contour intervals may be used. Off-site drainage areas impacting the project including topographic detail.
3. Streams, lakes, ponds or other bodies of water within the project area.
4. Other physical features including existing drainage swales, wetlands, closed depressions, sinkholes and areas of natural vegetation to be preserved.
5. Locations of proposed underground utilities, sewers and water lines. The locations of all existing and proposed utilities, sanitary sewers and water lines within 50 feet of property lines of the project site.
6. An overlay showing soil types and boundaries based on the Northampton County Soil Survey, as applicable, latest edition.
7. An overlay showing geologic types and boundaries and any special geologic features present on the site.
8. Proposed changes to land surface and vegetative cover.
9. Proposed structures, roads, paved areas and buildings.
10. Final contours at intervals of two (2) feet. In areas of steep slopes (greater than 15%), five-foot contour intervals may be used.
11. Stormwater Management District boundaries applicable to the site.
12. Clear identification of the location and nature of permanent stormwater BMPs.
13. An adequate access easement around all stormwater BMPs that would provide municipal ingress to and egress from a public right-of-way.
14. A schematic showing all tributaries contributing flow to the site and all existing man-made features beyond the property boundary that would be affected by the project.
15. The location of all public water supply wells within 400 feet of the project and all private water supply wells within 100 feet of the project.

C. Stormwater Management Controls and BMPs

1. All stormwater management controls and BMPs shall be shown on a map and described, including:
 - a. Groundwater recharge methods such as seepage pits, beds or trenches. When these structures are used, the locations of septic tank infiltration areas and wells shall be shown.
 - b. Other control devices or methods such as roof-top storage, semi-pervious paving materials, grass swales, parking lot ponding, vegetated strips, detention or retention ponds, storm sewers, etc.
2. All calculations, assumptions and criteria used in the design of the BMPs shall be shown.

3. All site testing data used to determine the feasibility of infiltration on a site.
 4. All details and specifications for the construction of the stormwater management controls and BMPs.
- D. The BMP Operations and Management Plan, as required in Article 7, describing how each permanent stormwater BMP will be operated and maintained and the identity of the person(s) responsible for operations and maintenance. A statement must be included, signed by the landowner, acknowledging that the stormwater BMPs are fixtures that cannot be altered or removed without approval by the municipality.
- E. An Environmental Resources Site Design Assessment that described the following:
1. The extent to which the proposed grading and impervious cover avoid disturbance of significant environmental resources and preserve existing site hydrology.
 2. An assessment of whether alternative grading and impervious cover site design could lessen the disturbance of significant environmental resources and/or make better use of the site hydrologic resources.
 3. A description of how the proposed stormwater management controls and BMPs serve to mitigate any adverse impacts on environmental resources on the site.

Significant environmental resources considered in the site design assessment include, but are not limited to, steep slopes, ponds, lakes, streams, wetlands, hydric soils, floodplains, riparian vegetation, native vegetation and special geologic features.

SECTION C-404. PLAN SUBMISSION

- A. For Regulated Activities specified in Sections C-105.A. and C-105.B.:
1. The Drainage Plan shall be submitted by the developer to the municipal secretary (or other appropriate person) as part of the Preliminary Plan submission for the subdivision or land development.
 2. Four (4) copies of the Drainage Plan shall be submitted.
 3. Distribution of the Drainage Plan will be as follows:
 - a. One (1) copy to the municipal governing body.
 - b. One (1) copy to the municipal engineer.
 - c. Two (2) copies of the Lehigh Valley Planning Commission, except for Drainage Plans involving less than 10,000 square feet of additional impervious cover.
 4. Drainage Plans involving more than 10,000 square feet or additional impervious cover shall be submitted by the developer (possibly through the municipality) to the Lehigh Valley Planning Commission as part of the Preliminary Plan submission. The Lehigh Valley Planning Commission will conduct an advisory review of the Drainage Plan for consistency with the Bushkill Creek Stormwater Management Plan. The

LVPC will review details of the Erosion and Sedimentation Plan or the BMP Operations and Maintenance Plan.

- a. Two (2) copies of the Drainage Plan shall be submitted.
 - b. The LVPC will provide written comments to the developer and the municipality, within a time frame consistent with established procedures under the Municipalities Planning Code, as to whether the Drainage Plan has been found to be consistent with the Stormwater Management Plan.
- B. For Regulated Activities specified in Sections C-105.C. and C-105.D., the Drainage Plan shall be submitted by the developer to the municipal building permit officer as part of the building permit application.
- C. For Regulated Activities specified in Sections C-105.E, C-105.F and C-105.G:
1. The Drainage Plan shall be submitted by the developer to the Lehigh Valley Planning Commission for coordination with the DEP permit application process under Chapter 105 (Dam Safety and Waterway Management) and Chapter 106 (Flood Plain Management) of DEP's Rules and Regulations and the NPDES regulations.
 2. One (1) copy of the Drainage Plan shall be submitted.
- D. Earthmoving for all regulated activities under Section C-105 shall be conducted in accordance with the current federal and State regulations relative to the NPDES and DEP Chapter 102 regulations.

SECTION C-405. DRAINAGE PLAN REVIEW

- A. The municipality shall review the Drainage Plan, including the BMP Operations and Maintenance Plan, for consistency with the adopted Bushkill Creek Watershed Stormwater Management Plan as embodied by this Ordinance and with any permits issued by DEP. The municipality shall also review the Drainage Plan against any additional storm drainage provisions contained in the municipal subdivision and land development or zoning ordinance, as applicable.
- B. The municipality shall notify the applicant in writing whether the BMP Operations and Maintenance Plan is approved.
- C. The municipality may not approve any subdivision or land development (Regulated Activities 105.A. and 105.B.) or building permit application (Regulated Activities 105.C. and 105.D.) if the Drainage Plan has been found to be inconsistent with the Stormwater Management Plan.
- D. The municipality may require an "As-Built Survey" of all stormwater BMPs and an explanation of any discrepancies with the Drainage Plan.

SECTION C-406. MODIFICATION OF PLANS

A modification to a submitted Drainage Plan for a proposed development site which involves a change in control methods or techniques, or which involves the relocation or redesign of control measures, or which is necessary because soil or other conditions are not as stated on the Drainage Plan (as determined by the

municipality) shall require a resubmission of the modified Drainage Plan consistent with Section C-404 subject to review per Section C-405 of this Ordinance.

SECTION C-407. HARDSHIP WAIVER PROCEDURE

The municipality may hear requests for waivers where it is alleged that the provisions of this Ordinance inflict unnecessary hardship upon the applicant. The waiver request shall be in writing and accompanied by the requisite fee based upon a fee schedule adopted by the municipality. A copy of the waiver request shall be provided to each of the following: municipality, municipal engineer, municipal solicitor and Lehigh Valley Planning Commission. The request shall fully document the nature of the alleged hardship.

The municipality may grant a waiver provided that all of the following findings are made in a given case:

1. That there are unique physical circumstances or conditions, including irregularity of lot size or shape, or exceptional topographical or other physical conditions peculiar to the particular property, and that the unnecessary hardship is due to such conditions, and not the circumstances or conditions generally created by the provisions of this Ordinance in the Stormwater Management District in which the property is located;
2. That because of such physical circumstances or conditions, there is no possibility that the property can be developed in strict conformity with the provisions of this Ordinance, including the "no harm" provisions, and that the authorization of a waiver is therefore necessary to enable the reasonable use of the property;
3. That such unnecessary hardship has not been created by the applicant;
4. That the waiver, if authorized, will represent the minimum waiver that will afford relief and will represent the least modification possible of the regulation in issue; and
5. That financial hardship is not the criteria for granting of a hardship waiver.

In granting any waiver, the municipality may attach such conditions and safeguards as it may deem necessary to implement the purposes of this Ordinance. If a Hardship Waiver is granted, the applicant must still manage the quantity, velocity, direction and quality of resulting storm runoff as is necessary to prevent injury to health, safety or other property.

- A. For regulated activities described in Section C-105.A. and B., the Nazareth Borough Council shall hear requests for and decide on hardship waiver requests on behalf of the municipality. For regulated activities in Section C-105.C., D., E., and F., the Zoning Hearing Board shall hear requests for and decide on hardship waiver requests on behalf of the municipality.
- B. For regulated activities in Section C-105.C, D, E, F and G, the Zoning Hearing Board shall hear requests for and decide on hardship waiver requests on behalf of the municipality.
- C. The municipality shall not waive the water quality provisions of this Ordinance.

**ARTICLE 5
INSPECTIONS**

SECTION C-501. SCHEDULE OF INSPECTIONS

- A. DEP or its designees (e.g. County Conservation District) normally ensure compliance with any permits issued, including those for stormwater management. In addition to DEP compliance programs, the municipality or its designee may inspect all phases of the construction, operations, maintenance and any other implementation of stormwater BMPs.
- B. During any stage of the Regulated Earth Disturbance activities, if the municipality or its designee determines that any BMPs are not being implemented in accordance with this Ordinance, the municipality may suspend or revoke any existing permits or other approvals issued by the municipality until the deficiencies are corrected.

**ARTICLE 6
FEES AND EXPENSES**

SECTION C-601. GENERAL

The municipality may charge a reasonable fee for review of BMP Operations and Maintenance Plans to defray review costs incurred by the municipality. The applicant shall pay all such fees.

SECTION C-602. EXPENSES COVERED BY FEES

The fees required by this Ordinance shall at a minimum cover:

- A. The review of the BMP Operations and Maintenance Plan by the municipality.
- B. The site inspection.
- C. The inspection of required controls and improvements during construction.
- D. The final inspection upon completion of the controls and improvements required in the plan.
- E. Any additional work required to monitor and enforce any permit provisions, regulated by this Ordinance, correct violations, and assure the completion of stipulated remedial actions.
- F. Administrative and clerical costs.

**ARTICLE 7
STORMWATER BMP OPERATIONS AND MAINTENANCE PLAN REQUIREMENTS**

SECTION C-701. GENERAL REQUIREMENTS

No Regulated Earth Disturbance activities within the municipality shall commence until approval by the municipality of the BMP Operations and Maintenance Plan which describes how the permanent (e.g. post-construction) stormwater BMPs will be properly operated and maintained.

SECTION C-702. RESPONSIBILITIES FOR OPERATIONS AND MAINTENANCE OF BMPS

- A. The BMP Operations and Maintenance Plan for the project site shall establish responsibilities for the continuing operation and maintenance of all permanent stormwater BMPS, as follows:
 - 1. If a Plan includes structures or lots which are to be separately owned and in which streets, sewers and other public improvements are to be dedicated to the municipality, stormwater BMPS may also be dedicated to and maintained by the municipality;
 - 2. If a Plan includes operations and maintenance by a single ownership or if sewers and other public improvements are to be privately owned and maintained, then the operation and maintenance of stormwater BMPS shall be the responsibility of the owner or private management entity.
- B. The municipality shall make the final determination on the continuing operations and maintenance responsibilities. The municipality reserves the right to accept or reject the operations and maintenance responsibility for any or all of the stormwater BMPS.

SECTION C-703. ADHERENCE TO APPROVED BMP OPERATIONS AND MAINTENANCE PLAN

It shall be unlawful to alter or remove any permanent stormwater BMP required by an approved BMP Operations and Maintenance Plan or to allow the property to remain in a condition which does not conform to an approved BMP Operations and Maintenance Plan unless an exception is granted in writing by the municipality.

SECTION C-704. OPERATIONS AND MAINTENANCE AGREEMENT FOR PRIVATELY OWNED STORMWATER BMPS

- A. The property owner shall sign an operations and maintenance agreement with the municipality covering all stormwater BMPS that are to be privately owned. The agreement shall include the terms of the format agreement referenced in Appendix C-D of this Ordinance.
- B. Other items may be included in the agreement where determined by the municipality to be reasonable or necessary to guarantee the satisfactory operation and maintenance of all permanent stormwater BMPS. The agreement shall be subject to the review and approval of the municipality.

SECTION C-705. STORMWATER MANAGEMENT EASEMENTS

Stormwater management easements shall be provided by the property owner if necessary for access for inspections and maintenance or for preservation of stormwater conveyance, infiltration, detention areas and other BMPS by persons other than the property owner. The purpose of the easement shall be specified in any agreement under Section C-704.

SECTION C-706.RECORDING OF APPROVED BMP OPERATIONS AND MAINTENANCE PLAN AND RELATED AGREEMENTS

- A. The owner of any land upon which permanent BMPs will be placed, constructed or implemented, as described in the BMP Operations and Maintenance Plan, shall record the following documents in the Office of the Recorder of Deeds for Northampton County, as applicable, within 90 days of approval of the BMP Operations Plan by the municipality:
 - 1. The Operations and Maintenance Plan or a summary thereof
 - 2. Operations and Maintenance Agreements under Section C-704
 - 3. Easements under Section C-705
- B. The municipality may suspend or revoke any approvals granted for the project site upon discovery of the failure of the owner to comply with this Section.

SECTION C-707. MUNICIPAL STORMWATER BMP OPERATION AND MAINTENANCE FUND

- A. If stormwater BMPs are accepted by the municipality for dedication, the municipality may require persons installing stormwater BMPs to pay a specified amount to the Municipal Stormwater BMP Operation and Maintenance Fund to help defray costs of operations and maintenance activities. The amount may be determined as follows:
 - 1. If the BMP is to be owned and maintained by the municipality, the amount shall cover the estimated costs for operation and maintenance in perpetuity, as determined by the municipality.
 - 2. The amount shall then be converted to present worth of the annual series values.
- B. If a BMP is proposed that also serves as a recreation facility (e.g. ballfield, lake), the municipality may adjust the amount due accordingly.

**ARTICLE 8
PROHIBITIONS**

SECTION C-801. PROHIBITED DISCHARGES

- A. No person in the municipality shall allow or cause to allow stormwater discharges into the municipality's separate storm sewer system which are not composed entirely of stormwater except as provided in subsection B below or as allowed under a State or Federal permit.
- B. Discharges that may be allowed based on the municipality finding that the discharge(s) do not significantly contribute pollution to surface waters of the Commonwealth are listed below.
 - 1. Discharges from fire fighting activities
 - 2. Potable water sources including dechlorinated water line and fire hydrant flushings
 - 3. Irrigation drainage

4. Routine external building washdown which does not use detergents or other compounds
 5. Air conditioning condensate
 6. Water from individual residential car washing
 7. Springs
 8. Water from crawl space pumps
 9. Uncontaminated water from foundation or from footing drains
 10. Flows from riparian habitats and wetlands
 11. Lawn watering
 12. Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spill material has been removed) and where detergents are not used
 13. Dechlorinated swimming pool discharges
 14. Uncontaminated groundwater
- C. In the event that the municipality determines that any of the discharges identified in Section C-801.B. significantly contribute to pollution of waters of the Commonwealth or is so notified by DEP, the municipality will notify the responsible person to cease the discharge.
- D. Upon notice provided by the municipality under Section C-801.C., the discharger will have a reasonable time, as determined by the municipality, to cease the discharge consistent with the degree of pollution caused by the discharge.
- E. Nothing in this Section shall affect a discharger's responsibilities under state law.

SECTION C-802. PROHIBITED CONNECTIONS

The following connections are prohibited, except as provided in Section C-801.B. above:

- A. Any drain or conveyance, whether on the surface or subsurface, which allows any non-stormwater discharge including sewage, process wastewater and wash water to enter the separate storm sewer system and any connections to the storm drain system from indoor drains and sinks
- B. Any drain or conveyance connected from a commercial or industrial land use to the separate storm sewer system which has not been documented in plans, maps or equivalent records and approved by the municipality.

SECTION C-803. ROOF DRAINS

- A. Roof drains shall not be connected to streets, sanitary or storm sewers or roadside ditches, except as provided in Section C-803.B.

- B. When it is more advantageous to connect directly to streets or storm sewers, connections of roof drains to streets or roadside ditches may be permitted by the municipality.
- C. Roof drains shall discharge to infiltration areas or vegetative BMPs to the maximum extent practicable.

SECTION C-804. ALTERATION OF BMPS

- A. No person shall modify, remove, fill, landscape or alter any existing stormwater BMP without the written approval of the municipality unless it is part of an approved maintenance program.
- B. No person shall place any structure, fill, landscaping or vegetation into a stormwater BMP or within a drainage easement, which would limit or alter the functioning of the BMP, without the written approval of the municipality.

**ARTICLE 9
RIGHT OF ENTRY, NOTIFICATION AND ENFORCEMENT**

SECTION C-901. RIGHT OF ENTRY

- A. Upon presentation of proper credentials and with the consent of the land owners, duly authorized representatives of the municipality may, with permission of the owner, enter upon any property within the municipality to inspect the implementation, condition or operation and maintenance of the stormwater BMPs or to investigate or ascertain the condition of the subject property in regard to any aspect regulated by this Ordinance.
- B. In the event that the land owner refuses admission to the property, duly authorized representatives of the municipality may seek an administrative search warrant issued by a district justice to gain access to the property.

SECTION C-902. NOTIFICATION

- A. Whenever the municipality finds that a person has violated a prohibition or failed to meet a requirement of this Ordinance, the municipality may order compliance by written notice to the responsible person. Such notice may require without limitation:
 1. The name of the owner of record and any other person against whom the municipality intends to take action.
 2. The location of the property in violation.
 3. The performance of monitoring, analyses and reporting
 4. The elimination of prohibited connections or discharges
 5. Cessation of any violating discharges, practices or operations
 6. The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property
 7. Payment of a fine to cover administrative and remediation costs

8. The implementation of stormwater BMPs
 9. Operation and maintenance of stormwater BMPs
- B. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of the violation(s). Said notice may further advise that should the violator fail to take the required action within the established deadline, the work will be done by the municipality or designee and the expense thereof, together with all related lien and enforcement fees, charges and expenses, shall be charged to the violator.
- C. Failure to comply within the time specified shall also subject such person to the penalty provisions of this Ordinance. All such penalties shall be deemed cumulative and shall not prevent the municipality from pursuing any and all other remedies available in law or equity.

SECTION C-903. SUSPENSION AND REVOCATION OF PERMITS AND APPROVALS

- A. Any building, land development or other permit or approval issued by the municipality may be suspended or revoked by the municipality for:
1. Non-compliance with or failure to implement any provision of the permit
 2. A violation of any provision of this Ordinance
 3. The creation of any condition or the commission of any act during construction or development which constitutes or creates a hazard or nuisance, pollution or which endangers the life or property of others.
- B. A suspended permit or approval shall be reinstated by the municipality when:
1. The municipality or designee has inspected and approved the corrections to the stormwater BMPs or the elimination of the hazard or nuisance.
 2. The municipality is satisfied that the violation of the ordinance, law or rule and regulation has been corrected.
 3. Payment of all municipal fees, costs and expenses related to or arising from the violation has been made.
- C. A permit or approval which has been revoked by the municipality cannot be reinstated. The applicant may apply for a new permit under the procedures outlined in this Ordinance.

SECTION C-904. PENALTIES

- A. Any person, partnership or corporation who or which has violated the provisions of this Chapter shall, upon being found liable therefor in a civil enforcement proceeding commenced by the Borough, pay a judgment of not more than Five Hundred (\$500.00) Dollars plus all court costs, including reasonable attorney's fees incurred by the Borough as a result thereof. No judgment shall commence or be imposed, levied or payable until the date of the determination of a violation by the district justice. If the defendant neither pays nor timely appeals the judgment, the Borough may enforce the judgment pursuant to the applicable rules of civil procedure. Each day that a violation continues shall constitute a separate violation, unless the district justice, determining that there has been a violation, further

determines that there was a good faith basis for the person, partnership, or corporation violating this Chapter to have believed that there was no such violation, in which event there shall be deemed to have been only one such violation until the fifth (5th) day following the date of the determination of a violation by the district justice and thereafter each day that a violation continues shall constitute a separate violation.

- B. The court of common pleas, upon petition, may grant an order of stay upon cause shown, tolling the per diem judgment pending a final adjudication of the violation and judgment.
- C. Nothing contained in this Section shall be construed or interpreted to grant to any person or entity other than the Borough the right to commence any action for enforcement pursuant to this Section.
- D. District justices shall have initial jurisdiction in proceedings brought under this Section.
- E. In addition, the municipality, through its solicitor, may institute injunctive, mandamus or any other appropriate action or proceeding at law or in equity for the enforcement of this Ordinance. Any court of competent jurisdiction shall have the right to issue restraining orders, temporary or permanent injunctions, mandamus or other appropriate forms of remedy or relief.

SECTION C-905. APPEALS

Any person aggrieved by any action of the municipality or its designee relevant to the provisions of this Ordinance may appeal using the appeal procedures established in the Pennsylvania Municipalities Planning Code.

APPENDIX C-A
(Not Included in Plan Copy of Ordinance)

C-A-1 Map of Bushkill Creek Watershed

APPENDIX C-B

- C-B-1 NRCS Type II 24-Hour Rainfall Distribution
(Graphic & Tabular)
- C-B-2 Intensity-Duration-Frequency Curves
- C-B-3 Runoff Curve Numbers and Percent
Imperviousness Values
- C-B-4 Runoff Coefficients for the Rational Method
- C-B-5 Manning 'n' Values

Appendix C-C

C-C Recommendation Chart for Infiltration Stormwater Management BMPs in Carbonate Bedrock

Appendix C-D

C-D Stormwater Best Management Practices
Operations and Maintenance Agreement

APPENDIX C-D

**STORMWATER BEST MANAGEMENT PRACTICES
OPERATIONS AND MAINTENANCE AGREEMENT**

THIS AGREEMENT, made and entered into this _____ day of _____, 200__, 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 stormwater management BMP Operations and Maintenance Plan approved by the municipality (hereinafter referred to as the "Plan") for the property identified herein, which is attached hereto as Appendix A and made part hereof, as approved by the municipality, provides for management of stormwater within the confines of the Property through the use of Best Management Practices (BMP's); 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 stormwater Best Management Practices be constructed and maintained on the Property; and

WHEREAS, for the purposes of this agreement, the following definitions shall apply:

- BMP - "Best Management Practice;" activities, facilities, designs, measures or procedures used to manage stormwater impacts from land development, to protect and maintain water quality and groundwater recharge and to otherwise meet the purposes of the Municipal Stormwater Management Ordinance, including but not limited to infiltration trenches, seepage pits, filter strips, bioretention, wet ponds, permeable paving, rain gardens, grassed swales, forested buffers, sand filters and detention basins.
- Infiltration Trench - A BMP surface structure designed, constructed, and maintained for the purpose of providing infiltration or recharge of stormwater into the soil and/or groundwater aquifer,
- Seepage Pit - An underground BMP structure designed, constructed, and maintained for the purpose of providing infiltration or recharge of stormwater into the soil and/or groundwater aquifer,
- Rain Garden - A BMP overlain with appropriate mulch and suitable vegetation designed, constructed, and maintained for the purpose of providing infiltration or recharge of stormwater into the soil and/or underground aquifer, and

WHEREAS, the municipality requires, through the implementation of the Plan, that stormwater management BMPs as required by said Plan and the Municipal Stormwater Management Ordinance be constructed and adequately operated and maintained by the Landowner, his successors and assigns. And

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 BMPs shall be constructed by the Landowner in accordance with the plans and specifications identified in the Plan.
2. The Landowner shall operate and maintain the BMP(s) as shown on the Plan in good working order acceptable to the municipality and in accordance with the specific maintenance requirements noted on the 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 identification, to inspect the BMP(s) whenever it deems 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 BMP(s) as shown on the Plan in good working order acceptable to the municipality, the municipality or its representatives may enter upon the Property and take whatever action is deemed necessary to maintain said BMP(s). This provision shall not be construed to allow the municipality to erect any permanent structure on the land of the Landowner. 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 and if not timely paid, a municipal lien shall be placed upon the premises for 110% of the invoice amount, plus statutorily allowed fees, expenses and costs.
6. The intent and purpose of this Agreement is to ensure the proper maintenance of the onsite BMP(s) by the Landowner; provided, however, that this Agreement shall not be deemed to create or effect any additional liability of any party for damage alleged to result from or be caused by stormwater runoff.
7. The Landowner, its executors, administrators, assigns, and other successors in interests, hereby release and hold harmless the municipality's employees and designated representatives 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. In the event that a claim is asserted against the municipality, its designated representatives or employees, the municipality shall promptly notify the Landowner and the Landowner shall defend, at his own expense, any suit based on the claim. If any judgment or claims against the municipality's employees or designated representatives shall be allowed, the Landowner shall pay all costs and expenses regarding said judgment or claim.
8. The municipality shall inspect the BMP(s) as necessary 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:

(SEAL)

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 of _____, 20____, has acknowledged the same before me in my said County and State.

GIVEN UNDER MY HAND THIS _____ day of _____, 200_

NOTARY PUBLIC

(SEAL)

Appendix C-E

C-E Low Impact Development Practices

APPENDIX C-E

LOW IMPACT DEVELOPMENT PRACTICES

ALTERNATIVE APPROACH FOR MANAGING STORMWATER RUNOFF

Natural hydrologic conditions may be altered radically by poorly planned development practices, such as introducing unneeded impervious surfaces, destroying existing drainage swales, constructing unnecessary storm sewers, and changing local topography. A traditional drainage approach of development has been to remove runoff from a site as quickly as possible and capture it in a detention basin. This approach leads ultimately to the degradation of water quality as well as expenditure of additional resources for detaining and managing concentrated runoff at some downstream location.

The recommended alternative approach is to promote practices that will minimize postdevelopment runoff rates and volumes, which will minimize needs for artificial conveyance and storage facilities. To simulate pre-development hydrologic conditions, forced infiltration is often necessary to offset the loss of infiltration by creation of impervious surfaces. The ability of the ground to infiltrate depends upon the soil types and its conditions.

Preserving natural hydrologic conditions requires careful alternative site design considerations. Site design practices include preserving natural drainage features, minimizing impervious surface area, reducing the hydraulic connectivity of impervious surfaces, and protecting natural depression storage. A well-designed site will contain a mix of all those features. The following describes various techniques to achieve the alternative approach:

- **Preserving Natural Drainage Features.** Protecting natural drainage features, particularly vegetated drainage swales and channels, is desirable because of their ability to infiltrate and attenuate flows and to filter pollutants. However, this objective is often not accomplished in land development. In fact, commonly held drainage philosophy encourages just the opposite pattern -- streets and adjacent storm sewers typically are located in the natural headwater valleys and swales, thereby replacing natural drainage functions with a completely impervious system. As a result, runoff and pollutants generated from impervious surfaces flow directly into storm sewers with no opportunity for attenuation, infiltration, or filtration. Developments designed to fit site topography also minimizes the amount of grading on site.
- **Protecting Natural Depression Storage Areas.** Depressional storage areas have no surface outlet, or drain very slowly following a storm event. They can be commonly seen as ponded areas in farm fields during the wet season or after large runoff events. Traditional development practices eliminate these depressions by filling or draining, thereby obliterating their ability to reduce surface runoff volumes and trap pollutants. The volume and release-rate characteristics of depressions should be protected in the design of the development site. The depressions can be protected by simply avoiding the depression or by incorporating its storage as additional capacity in required detention facilities.
- **Avoiding Introduction of Impervious Areas.** Careful site planning should consider reducing impervious coverage to the maximum extent possible. Building footprints, sidewalks, driveways and other features producing impervious surfaces should be evaluated to minimize impacts on runoff.
- **Reducing the Hydraulic Connectivity of Impervious Surfaces.** Impervious surfaces are significantly less of a problem if they are not directly connected to an impervious conveyance system (such as storm sewer). Two basic ways to reduce hydraulic connectivity are routing of roof runoff over lawns and reducing the use of storm sewers. Site grading should promote increasing travel time of

stormwater runoff, and should help reduce concentration of runoff to a single point in the development.

- **Routing Roof Runoff Over Lawns.** Roof runoff can be easily routed over lawns in most site designs. The practice discourages direct connections of downspouts to storm sewers or parking lots. The practice also discourages sloping driveways and parking lots to the street. By routing roof drains and crowning the driveway to run off to the lawn, the lawn is essentially used as a filter strip.
- **Reducing the Use of Storm Sewers.** By reducing use of storm sewers for draining streets, parking lots, and back yards, the potential for accelerating runoff from the development can be greatly reduced. The practice requires greater use of swales and may not be practical for some development sites, especially if there are concerns for areas that do not drain in a "reasonable" time. The practice requires educating local citizens and public works officials, who expect runoff to disappear shortly after a rainfall event.
- **Reducing Street Widths.** Street widths can be reduced by either eliminating on-street parking or by reducing roadway widths. Municipal planners and traffic designers should encourage narrower neighborhood streets which ultimately could lower maintenance.
- **Limiting Sidewalks to One Side of the Street.** A sidewalk on one side of the street may suffice in low-traffic neighborhoods. The lost sidewalk could be replaced with bicycle/recreational trails that follow back-of-lot lines. Where appropriate, backyard trails should be constructed using pervious materials.
- **Using Permeable Paving Materials.** These materials include permeable interlocking concrete paving blocks or porous bituminous concrete. Such materials should be considered as alternatives to conventional pavement surfaces, especially for low use surfaces such as driveways, overflow parking lots, and emergency access roads.
- **Reducing Building Setbacks.** Reducing building setbacks reduces driveway and entry walks and is most readily accomplished along low-traffic streets where traffic noise is not a problem.
- **Constructing Cluster Developments.** Cluster developments can also reduce the amount of impervious area for a given number of lots. The biggest savings is in street length, which also will reduce costs of the development. Cluster development clusters the construction activity onto less-sensitive areas without substantially affecting the gross density of development.

APPENDIX C-F

C-F PRELIMINARY SITE INVESTIGATION AND
TESTING REQUIREMENTS

APPENDIX C-F PRELIMINARY SITE INVESTIGATION AND TESTING REQUIREMENTS

Required Data and Site Information: The following data shall be gathered utilizing standard testing procedures as part of a Preliminary Site Investigation:

- Bedrock composition - Any apparent boundaries between carbonate and non-carbonate bedrock must be verified by a qualified geotechnical professional.
- Bedrock structural geology - This includes the possible presence of faults and mapping of conspicuous fracture traces or lineaments.
- Overburden and soil mantle composition and thickness
- Permeability of the soil
- Depth to the seasonal high water table
- Presence of special geologic features - This includes sinkholes, closed depressions, fracture traces, lineaments and geologic contacts between carbonate and non-carbonate bedrock

Investigation Required for All Sites

Review of Available Data, Maps and Reports: Some of the required information, as listed above, can be found in existing published data. Suggested resources include the following:

- Geologic maps and references for the development area
- The Bushkill Creek Basin Carbonate Prototype Area Closed Depression Map -available at the LVPC
- USGS topographic maps
- Northampton County soil survey maps
- Aerial photographs from the LVPC or other sources
- Relevant Pennsylvania Geologic Survey Open File Reports (Kochanov 1987a, 1987b) that provide maps of sinkholes and Karst features for Northampton County
- Kochanov and Reese (2003). Density of Mapped Karst Feature in South-Central and Southeastern Pennsylvania (Map 68)
- DCNR Online Sinkhole Inventory -
(<http://www.dcnr.state.pa.us/topogeo/hazards/sinkhole/default.asp>)

Field Inspections: In addition to gathering data from published sources, a field inspection of the proposed site is required. A field inspection can provide additional information relating to site features such as carbonate bedrock features, indicators of seasonal high stream-level or water table levels, streams, springs, etc.

Soil Test Pit and Percolation Test Requirements: A minimum of one test pit and a minimum of 2 percolation tests are required for every site. A test pit is a 2-3 foot wide, 8 foot deep trench excavated with a backhoe for observing subsurface conditions. The test pits will be used to describe soil depth and quality,

including soil horizons, and testing of permeability or percolation rates and can be conducted by a certified Sewage Enforcement Officer.

Percolation tests are to be conducted as follows (adapted from § 73.15. "Percolation Tests" of the Pennsylvania Code)

1. The percolation tests shall be made in separate holes uniformly spaced over the possible infiltration area.
2. An "Initial Presoak" should not be performed.
3. Percolation holes located within the possible infiltration area shall be used in the calculation of the average percolation rate.
4. Holes having a uniform diameter of 6 to 10-inches shall be bored or dug as follows:
 - a. To the depth of the bottom of the possible infiltration BMP
 - b. Alternate depths if the test pits/auger holes indicate that the soils are more suitable at a different depth (i.e., if a clay horizon is identified and more suitable soils are located beneath the horizon, and infiltration test should be performed in the suitable horizon).
5. The bottom and sides of the hole shall be scarified with a knife blade or sharp-pointed instrument to completely remove any smeared soil surfaces and to provide a natural soil interface into which water may percolate. Loose material shall be removed from the hole. Two inches of coarse sand or fine gravel shall be placed in the bottom of the hole to protect the soil from scouring and clogging of the pores.
6. Immediately before the percolation test, as a final presoak, water shall be placed in the hole to a minimum depth of 6-inches over the gravel and readjusted every 30 minutes for 1 hour.
7. The drop in the water level during the last 30 minutes of the final presoaking period shall be applied to the following standard to determine the time interval between readings for each percolation hole:
 - a. If water remains in the hole, the interval for readings during the percolation test shall be 30 minutes.
 - b. If no water remains in the hole, the interval for readings during the percolation test may be reduced to 10 minutes.
8. After the final presoaking period, water in the hole shall again be adjusted to approximately 6-inches over the gravel and readjusted when necessary after each reading.
 - a. Measurement to the water level in the individual percolation holes shall be made from a fixed reference point and shall continue at the interval determined from step No. 7 (above) for each individual percolation hole until a minimum of eight readings are completed or until a stabilized rate of drop is obtained, whichever occurs first. A stabilized rate of drop means a difference of ¼-inch or less of drop between the highest and lowest readings of four consecutive readings.
 - b. The drop that occurs in the final period in percolation test holes, expressed as inches per hour, shall be used to calculate the average percolation rate.

- c. When the rate of drop in a percolation test is too slow to obtain a measurable rate, the rate of 0.25 inches per hour shall be assigned to that hole for use in calculating the average percolation rate. The infiltration area may be placed over holes with no measurable rate when the average percolation rate for the possible infiltration area is within the acceptable range.

When a percolation test hole yields a percolation rate of greater than 12-inches per hour, the proposed infiltration area may not be designed or installed within 25-feet of this hole unless the municipality determines that a testing anomaly caused the fast percolation rate and a retest of the area yields acceptable percolation rates. This percolation rate limit is established to protect groundwater quality and to minimize the risk of subsidence.

Additional Site Investigation and Testing Required if Infiltration is Proposed

Soil Test Pit Requirements: The required number of test pits varies with Effective Soil Thickness. As risk factors increase, the number of test pits increases. A minimum of 2 test pits, uniformly spaced within the proposed infiltration area (e.g. the 2 pits should be centered on each half of the proposed infiltration area), are required for any site proposing infiltration unless the applicant can demonstrate that one test pit is adequately representative of the area proposed for infiltration. For larger infiltration areas, multiple test pits shall be developed at the densities as listed below:

Effective Soil Thickness (ft.)	Test Pit Density (per acre of proposed infiltration area)*	Percolation Tests (per acre of proposed infiltration area)**	Auger Grid Spacing (Feet On-Center)***
8	4	8	50
4 to 8	6	12	35
2 to 4	8	16	25

*No. of Test Pits required = Infiltration sq. ft./43,560 sq. ft. x test pit density from chart rounded up to the nearest whole number

**No. of Percolation Tests required = Infiltration sq. ft./43,560 sq. ft. x percolation tests from chart rounded up to the nearest whole number

***Auger testing is only required on Carbonate sites

Soil Auger Testing Requirements for Carbonate Areas: Because soil depth is not uniform in many carbonate areas, test pits will not be sufficient to accurately determine the depth to bedrock. Augering provides this essential data as inexpensively as possible. Track-rig rotary soil auger test drilling allows relatively inexpensive, qualitative determination of the presence of overburden voids and will generally penetrate to the top-of-bedrock. Augers typically extend to depths of 20 feet. Special augers extend to as much as 50 feet. Augers do not extend into the bedrock. Auger testing should be performed in a grid pattern across the proposed infiltration area, spaced as indicated in the above table.

Percolation Testing Requirements: A minimum of six percolation tests shall be conducted in accordance with the procedures listed above unless the applicant can demonstrate that fewer tests accurately represent the percolation rate of the proposed infiltration area. Additional testing shall be required if the initial test results show significant variability in percolation rate. For larger infiltration areas, percolation tests shall be conducted at the densities listed in the table above.

**MONOCACY CREEK WATERSHED ACT 167
STORMWATER MANAGEMENT ORDINANCE**

**ARTICLE 1
GENERAL PROVISIONS**

SECTION 101. SHORT TITLE

The Ordinance shall be known and may be cited as the “Monocacy Creek Watershed Act 167 Stormwater Management Ordinance.”

SECTION 102. STATEMENT OF FINDINGS

The governing body of the municipality finds that:

A. Inadequate management of accelerated runoff of stormwater resulting from development throughout a watershed increases flood flows and velocities, contributes to erosion and sedimentation, changes the natural hydrologic patterns, destroys aquatic habitat, elevates aquatic pollutant concentrations and loadings, overtaxes the carrying capacity of streams and storm sewers, greatly increases the cost of public facilities to carry and control stormwater, undermines floodplain management and flood control efforts in downstream communities, reduces groundwater recharge, and threatens public health and safety.

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

C. Stormwater can be an important resource by providing groundwater recharge for water supplies and base flow of streams, which also protects and maintains surface water quality.

D. Public education on the control of pollution from stormwater is an essential component in successfully addressing stormwater.

E. Federal and State regulations require certain municipalities to implement a program for 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).

F. Non-stormwater discharges to municipal separate storm sewer systems can contribute to pollution of the waters of the Commonwealth.

SECTION 103. PURPOSE

The purpose of this Ordinance is to promote the public health, safety and welfare within the Monocacy Creek Watershed by minimizing the damages and maximizing the benefits described in Section 102 of this Ordinance by provisions designed to:

A. Manage stormwater runoff impacts at their source by regulating activities which cause stormwater problems.

- B. Utilize and preserve the desirable existing natural drainage systems.
- C. Encourage infiltration of stormwater, where appropriate, to maintain groundwater recharge, to prevent degradation of surface and groundwater quality, and to otherwise protect water resources.
- D. Maintain the existing flows and quality of waterways and wetlands in the municipality and the Commonwealth.
- E. Preserve and restore the flood carrying capacity of streams.
- F. Provide for proper maintenance of all permanent stormwater management BMPs that are implemented in the municipality.
- G. Provide review procedures and performance standards for stormwater planning, design, and management.
- H. Manage stormwater impacts close to the runoff source which requires a minimum of structures and relies on natural processes.
- I. Meet legal water quality requirements under State law, including regulations at 25 Pa. Code Chapter 93.4a to protect and maintain “existing uses” and maintain the level of water quality to support those uses in all streams, and to protect and maintain water quality in “special protection” streams.
- J. Prevent scour and erosion of streambanks and streambeds.
- K. Provide standards to meet the NPDES permit requirements.

SECTION 104. STATUTORY AUTHORITY

The municipality is empowered to regulate these activities by the authority of the Act of October 4, 1978, P.L. 864 (Act 167). 32 P.S. Section 680.1, et seq., as amended, the “Stormwater Management Act”, Act 247, the Pennsylvania Municipalities Planning Code of July 31, 1968, P.L. 805; 53 P.S. §10101, as reenacted and amended, and the [appropriate municipal code].

SECTION 105. APPLICABILITY

This Ordinance shall only apply to those areas of the municipality which are located within the Monocacy Creek Watershed as delineated on an official map available for inspection at the municipal office. A map of the Monocacy Creek Watershed at a reduced scale is included in Appendix A for general reference.

All activities that may affect stormwater runoff, including land development and earth disturbance activity, are subject to regulation by this Ordinance. Regulated activities include:

- A. Land development.
- B. Subdivision.
- C. Construction of new or additional impervious surfaces (driveways, parking lots, etc.).
- D. Construction of new buildings or additions to existing buildings.
- E. Diversion or piping of any natural or man-made stream or channel.

F. Installation of stormwater systems or appurtenances thereto.

G. Regulated Earth Disturbance Activities.

H. Other than that included in 105.A through G, any Earth Disturbance Activities or any activities that include the alteration or development of land in a manner that may affect stormwater runoff onto adjacent property.

SECTION 106. EXEMPTIONS

A. Impervious Cover – Any proposed Regulated Activity, except those defined in Section 105.E through 105.H, which would create 10,000 square feet or less of additional impervious cover is exempt from the Drainage Plan preparation provisions of this Ordinance. If a site has previously received an exemption and is proposing additional development such that the total impervious cover on the site exceeds 10,000 square feet, and the currently proposed impervious cover is at least 1,000 square feet, a Drainage Plan shall be required for the new proposal.

1. The date of the municipal Ordinance adoption of the original Monocacy Creek Act 167 Stormwater Management Ordinance, March 1989 shall be the starting point from which to consider tracts as “parent tracts” in which future subdivisions and respective impervious area computations shall be cumulatively considered.

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

3. For a parent tract with a prior exemption, the current Drainage Plan shall control the runoff from only the impervious cover currently proposed, unless the proposed impervious cover is on a building lot from the previous exemption; in such case, all impervious cover proposed on that building lot since the ordinance adoption shall meet the ordinance provisions.

4. Additional impervious cover shall include, but not be limited to, additional indoor living spaces, decks, patios, garages, driveways, storage sheds and similar structures, and roof, parking or driveway areas, and any new streets and sidewalks constructed as part of or for the proposed Regulated Activity.

5. Any additional areas proposed initially to be gravel, crushed stone, porous pavement, etc., shall be assumed to be impervious for the purposes of comparison to the exemption criteria. Any existing gravel, crushed stone or hard-packed soil areas on a site shall be considered as pervious cover for the purpose of exemption evaluation.

If a Drainage Plan is required, the pre- and post-development calculations should be based on actual cover conditions regardless of any assumptions made for purposes of exemption evaluation.

B. Prior Drainage Plan Approval – Any Regulated Activity for which a Drainage Plan was previously prepared as part of a subdivision or land development proposal that received preliminary plan approval from the municipality prior to the effective date of this Ordinance is exempt from the Drainage Plan preparation provisions of this Ordinance, except as cited in Section 106.D, provided that the approved Drainage Plan included design of stormwater facilities to control runoff from the site currently proposed for Regulated Activities consistent with ordinance provisions in effect at the time of approval, and the approval has not lapsed under the Municipalities Planning Code. If significant revisions are made to the Drainage Plan after both the preliminary plan approval and the effective date of this Ordinance, preparation of a new Drainage Plan, subject to the provisions of this Ordinance, shall be required. Significant revisions would include a change in control methods or techniques, relocation or redesign of control measures, or changes necessary because soil or other conditions are not as stated on the original Drainage Plan.

C. Activities associated with 105.H shall be exempt from the Drainage Plan preparation requirements of the Ordinance unless the municipality determines that the activity could create a new or relocated concentrated drainage discharge. Agricultural activity as may be covered by Section 105.H are exempt from the Drainage Plan provisions of this Ordinance.

D. These exemptions shall not relieve the applicant from implementing such measures as are necessary to protect health, safety and property, and to meet State Water Quality Requirements. These measures include adequate and safe conveyance of stormwater on the site and as it leaves the site. These exemptions do not relieve the applicant from the responsibility to secure permits or approvals for activities regulated by any other applicable code, rule, act, or ordinance.

E. No exemptions shall be provided for Regulated Activities as defined in Sections 105.E through 105.G.

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

G. Timber harvesting activities are exempt from the rate control and Drainage Plan preparation requirements of this Ordinance provided the activities are performed according to the requirements of 25 Pa. Code 102.

H. 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, safety, property or the environment.

SECTION 107. REPEALER

Any ordinance of the municipality inconsistent with any of the provisions of this Ordinance is hereby repealed to the extent of the inconsistency only.

SECTION 108. SEVERABILITY

Should any section or provision of this Ordinance be declared invalid by a court of competent jurisdiction, such decision shall not affect the validity of any of the remaining provisions of this Ordinance.

SECTION 109. COMPATIBILITY WITH OTHER ORDINANCE REQUIREMENTS

Approvals issued pursuant to this Ordinance do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other applicable code, rule, act or ordinance.

SECTION 110. DUTY OF PERSONS ENGAGED IN THE DEVELOPMENT OF LAND

Notwithstanding any provisions of this Ordinance, including exemption and waiver provisions, 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 to manage the rate, volume, direction and quality of resulting stormwater runoff in a manner which otherwise adequately protects health and property from possible injury.

ARTICLE 2

DEFINITIONS

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

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

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

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

Accelerated Erosion – The removal of the surface of the land through the combined action of human activities and natural processes, at a rate greater than would occur because of the natural processes alone.

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.

Best Management Practice (BMP) – Activities, facilities, measures or procedures used to manage stormwater quantity and quality impacts from the Regulated Activities listed in Section 105, to meet State Water Quality Requirements, to promote groundwater recharge and to otherwise meet the purposes of this Ordinance.

Best Management Practice Operations and Maintenance Plan – Documentation, included as part of a Drainage Plan, detailing the proposed BMPs, how they will be operated and maintained and who will be responsible.

Bioretention – Densely vegetated, depressed features that store stormwater and filter it through vegetation, mulch, planting soil, etc. Ultimately stormwater is evapotranspired, infiltrated or discharged. Optimal bioretention areas mimic natural forest ecosystems in terms of species diversity, density, distribution, use of native plants, etc.

Buffer – (1) Streamside Buffer – A zone of variable width located along a stream that is vegetated and is designed to filter pollutants from runoff.

(2) Special Geologic Feature Buffer – A required isolation distance from a special geologic feature to a proposed BMP needed to reduce the risk of sinkhole formation due to stormwater management activities.

Capture/Reuse – Stormwater management techniques such as cisterns and rain barrels which direct runoff into storage devices, surface or sub-surface, for later reuse, such as for irrigation of gardens and other planted areas.

Carbonate Bedrock – Rock consisting chiefly of carbonate minerals, such as limestone and dolomite; specifically a sedimentary rock composed of more than 50% by weight of carbonate minerals that underlies soil or other unconsolidated, superficial material.

Cistern – An underground reservoir or tank for storing rainwater.

Closed Depression – A distinctive bowl-shaped depression in the land surface. It is characterized by internal drainage, varying magnitude and an unbroken ground surface.

Concentrated Drainage Discharge – Stormwater runoff leaving a property via a point source.

Conservation District – The Lehigh or Northampton County Conservation District, as applicable.

Constructed Wetlands – Constructed wetlands are similar to wet ponds (see below) and consist of a basin which provides for necessary stormwater storage as well as a permanent pool or water level, planted with wetland vegetation. To be successful, constructed wetlands must have adequate natural hydrology (both runoff inputs as well as soils and water table which allow for maintenance of a permanent pool of water). In these cases, the permanent pool must be designed carefully, usually with shallow edge benches, so that water levels are appropriate to support carefully selected wetland vegetation.

Culvert – A pipe, conduit or similar structure including appurtenant works which carries surface water.

Dam – An artificial barrier, together with its appurtenant works, constructed for the purpose of impounding or storing water or another fluid or semifluid or a refuse bank, fill or structure for highway, railroad or other purposes which does or may impound water or another fluid or semifluid.

DEP – The Pennsylvania Department of Environmental Protection.

Design Storm – The depth and time distribution of precipitation from a storm event measured in probability of occurrence (e.g., 100-yr. storm) and duration (e.g., 24-hour) and used in computing stormwater management control systems.

Detention Basin – A basin designed to retard stormwater runoff by temporarily storing the runoff and releasing it at a predetermined rate.

Developer – A person, partnership, association, corporation or other entity, or any responsible person therein or agent thereof, that undertakes any Regulated Activity of this Ordinance.

Development Site (Site) – The specific tract of land for which a Regulated Activity is proposed.

Diffused Drainage – See Sheet Flow.

Direct Recharge/Subsurface BMP – A BMP designed to direct runoff to groundwater recharge without providing for vegetative uptake. Examples include infiltration trenches, seepage beds, drywells and stormwater drainage wells such that nearly all runoff becomes recharge to groundwater.

Drainage Easement – A right granted by a land owner to a grantee, allowing the use of private land for stormwater management purposes.

Drainage Plan – The documentation of the proposed stormwater quantity and quality management controls to be used for a given development site, including a BMP Operations and Maintenance Plan, the contents of which are established in Section 403.

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, land development, agricultural activity, timber harvesting activities, road maintenance activities, mineral extraction, building construction and the moving, depositing, stockpiling or storing of soil, rock or earth materials.

Erosion – The removal of soil particles by the action of water, wind, ice or other geological agents.

Existing Uses – Those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards. (25 Pa. Code Chapter 93.1)

Fill – Man-made deposits of natural soils or rock products and waste materials.

Filter Strips – See Vegetated Buffers.

Freeboard – The incremental depth in a stormwater management structure, provided as a safety factor of design, above that required to convey the design runoff event.

Groundwater Recharge – Replenishment of existing natural underground water supplies.

Hardship Waiver Request – A written request for a waiver alleging that the provisions of this Ordinance inflict unnecessary hardship upon the applicant. A Hardship Waiver does not apply to and is not available from the water quality provisions of this Ordinance and should not be granted.

Hot Spot Land Uses – A land use or activity that generates higher concentrations of hydrocarbons, trace metals or other toxic substances than typically found in stormwater runoff. These land uses are listed in Appendix H.

Hydrologic Engineering Center-Hydrologic Modeling System (HEC-HMS) – The computer-based hydrologic modeling technique developed by the U.S. Army Corps of Engineers and adapted to the Monocacy Creek Watershed for the Act 167 Plan Update. The model was “calibrated” to reflect actual flow values by adjusting key model input parameters.

Hydrologic Soil Group (HSG) – Soils are classified into four HSG’s (A, B, C and D) to indicate the minimum infiltration rates, which are obtained for bare soil after prolonged wetting. The Natural Resources Conservation Service (NRCS) of the U.S. Department of Agriculture defines the four groups and provides a list of most of the soils in the United States and their group classification. Soils become less permeable as the HSG varies from A to D. The soils in the area of the development site may be identified from a web soil survey report that can be accessed at www.websoilsurvey.sc.egov.usda.gov/App/HomePage.htm.

Impervious Surface (Impervious Cover) – A surface which prevents the percolation of water into the ground.

Infiltration Practice – A practice designed to allow runoff an opportunity to infiltrate into the ground (e.g., French drain, seepage pit, seepage trench or bioretention area).

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

Land Development – Any of the following activities:

(1) The improvement of one lot or two or more contiguous lots, tracts or parcels of land for any purpose involving (i) a group of two or more residential or nonresidential buildings, whether proposed initially or cumulatively, or a single nonresidential building on a lot or lots regardless of the number of occupants of tenure; or (ii) the division or allocation of land or space between or among two or more existing or prospective occupants by means of, or for the purpose of streets, common areas, leaseholds, condominiums, building groups or other features.

(2) A subdivision of land.

(3) Development in accordance with Section 503 (1.1) of the Pennsylvania Municipalities Planning Code.

Loading Rate – The ratio of the land area draining to the system, as modified by the weighting factors in Section 308.B. compared to the base area of the infiltration system.

Low Impact Development – A development approach that promotes practices that will minimize post-development runoff rates and volumes thereby minimizing needs for artificial conveyance and storage

facilities. Site design practices include preserving natural drainage features, minimizing impervious surface area, reducing the hydraulic connectivity of impervious surfaces and protecting natural depression storage.

“Local” Runoff Conveyance Facilities – Any natural channel or man-made conveyance system which has the purpose of transporting runoff from the site to the Mainstem.

Mainstem (Main Channel) – Any stream segment or other conveyance used as a reach in the Monocacy Creek hydrologic model.

Manning Equation (Manning formula) – A method for calculation of velocity of flow (e.g., feet per second) and flow rate (e.g., cubic feet per second) in open channels based upon channel shape, roughness, depth of flow and slope. “Open channels” may include closed conduits so long as the flow is not under pressure.

Maryland Stormwater Design Manual – A stormwater design manual written by the Maryland Department of the Environment and the Center for Watershed Protection. The Manual can be obtained through the following web site: www.mde.state.md.us.

Minimum Disturbance/Minimum Maintenance Practices (MD/MM) – Site design practices in which careful limits are placed on site clearance prior to development allowing for maximum retention of existing vegetation (woodlands and other), minimum disturbance and compaction of existing soil mantle and minimum site application of chemicals post-development. Typically, MD/MM includes disturbance setback criteria from buildings as well as related site improvements such as walkways, driveways, roadways, and any other improvements. These criteria may vary by community context as well as by type of development being proposed. Additionally, MD/MM shall include provisions (e.g., deed restrictions, conservation easements) to protect these areas from future disturbance and from application of fertilizers, pesticides and herbicides.

Municipality – Borough of Nazareth, Northampton County, Pennsylvania.

No Harm Runoff Quantity Option – The option of using a less restrictive runoff quantity control if it can be shown that adequate and safe runoff conveyance exists and that the less restrictive control would not adversely affect health, safety and property.

NPDES – National Pollutant Discharge Elimination System.

NRCS – Natural Resources Conservation Service - U.S. Department of Agriculture. (Formerly the Soil Conservation Service.)

Oil/Water Separator – A structural mechanism designed to remove free oil and grease (and possibly solids) from stormwater runoff.

Outfall – “Point source” as described in 40 CFR § 122.2 at the point where the municipality’s storm sewer system discharges to waters of the Commonwealth.

Owner – One with an interest in and often dominion over a property.

Peak Discharge – The maximum rate of flow of stormwater runoff at a given location and time resulting from a specified storm event.

Person – An individual, partnership, public or private association or corporation, firm, trust, estate, municipality, governmental unit, public utility or any other legal entity whatsoever which is recognized by law as the subject of rights and duties.

Point Source – Any discernible, confined and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel or conduit from which stormwater is or may be discharged, as defined in State regulations at 25 Pa. Code § 92.1.

Preliminary Site Investigation – The determination of the depth to bedrock, the depth to the seasonal high water table and the soil permeability for a possible infiltration location on a site through the use of published data and on-site surveys. In carbonate bedrock areas, the location of special geologic features must also be determined along with the associated buffer distance to the possible infiltration area. See Appendix G.

Pre-treatment – Measures implemented for Hot Spot Land Uses designed to reduce the concentration of hydrocarbons, trace metals and other toxic substances to levels typically found in stormwater runoff.

Public Water Supplier – A person who owns or operates a Public Water System.

Public Water System – A system which provides water to the public for human consumption which has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. (See 25 Pa. Code Chapter 109)

Qualified Geotechnical Professional – A licensed professional geologist or a licensed professional engineer who has a background or expertise in geology or hydrogeology.

Rational Method – A method of runoff calculation using a standardized runoff coefficient (rational 'c'), acreage of tract and rainfall intensity determined by return period and by the time necessary for the entire tract to contribute runoff. The rational method formula for peak rate calculation is stated as follows: $Q = ciA$, where "Q" is the calculated peak flow rate in cubic feet per second, "c" is the dimensionless runoff coefficient (see Appendix C), "i" is the rainfall intensity in inches per hour, and "A" is the area of the tract in acres. The Rational method formula for runoff volume calculation is as follows: $V = cPA/12$ where "c" and "A" are as noted above, "P" is the total depth of precipitation for the design event in inches, and "V" is the total runoff volume in acre-feet.

Reach – Any of the natural or man-made runoff conveyance channels used for watershed runoff modeling purposes to connect the subareas and transport flows downstream.

Regulated Activities – All activities that may affect stormwater runoff, including land development and earth disturbance activity, which are subject to regulation by this Ordinance.

Regulated Earth Disturbance Activities – Activity involving earth disturbance, other than agricultural activity, subject to regulation under 25 Pa. Code 92, 25 Pa. Code 102, or the Clean Streams Law.

Release Rate – The percentage of the pre-development peak rate of runoff for a development site to which the post-development peak rate of runoff must be controlled to avoid peak flow increases throughout the watershed.

Return Period – An expression of the intensity of an event based on its statistical chance of being equaled or exceeded in any given year. An event with a 1% chance in any given year is stated to have a 100-year return period. An event with a 50% chance is stated to have a 2-year return period. Over a very long period of record, events might be expected to recur on average in accordance with their return period.

Road Maintenance – Earth disturbance activities within the existing road cross-section such as grading and repairing existing unpaved road surfaces, cutting road banks, cleaning or clearing drainage ditches and other similar activities.

Runoff – That part of precipitation which flows over the land.

Runoff BMP – A BMP designed for essentially the full volume of runoff entering the BMP to be discharged off-site.

Sediment Traps/Catch Basin Sumps – Chambers which provide storage below the outlet in a storm inlet to collect sediment, debris and associated pollutants, typically requiring periodic clean out.

Seepage Pit/Seepage Trench – An area of excavated earth filled with loose stone or similar material and into which surface water is directed for infiltration into the ground.

Separate Storm Sewer System – A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains) primarily used for collecting and conveying stormwater runoff.

Sheet Flow – Stormwater runoff flowing in a thin layer over the ground surface.

Soil-Cover-Complex Method – A method of runoff computation developed by NRCS which is based upon relating soil type and land use/cover to a runoff parameter called a Curve Number.

Special Geologic Features – Carbonate bedrock features, including but not limited to closed depressions, existing sinkholes, fracture traces, lineaments, joints, faults, caves, pinnacles and geologic contacts between carbonate and non-carbonate bedrock which may exist and must be identified on a site when stormwater management BMPs are being considered.

Spill Prevention and Response Program – A program that identifies procedures for preventing and, as needed, cleaning up potential spills and makes such procedures known and the necessary equipment available to appropriate personnel.

State Water Quality Requirements – As defined under State regulations—protection of designated and existing uses (See 25 Pa. Code Chapters 93 and 96)—including:

A. Each stream segment in Pennsylvania has a “designated use,” such as “cold water fishes” or “potable water supply,” which is listed in Chapter 93. These uses must be protected and maintained, under State regulations.

B. “Existing uses” are those attained as of November 1975, regardless whether they have been designated in Chapter 93. Regulated Earth Disturbance Activities must be designed to protect and maintain existing uses 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.

C. Water quality involves the chemical, biological and physical characteristics of surface water bodies. After Regulated Earth Disturbance Activities are complete, these characteristics can be impacted by addition of pollutants such as sediment, and changes in habitat through increased flow volumes and/or rates as a result of changes in land surface area from those activities. Therefore, permanent discharges to surface waters must be managed to protect the stream bank, streambed and structural integrity of the waterway, to prevent these impacts.

Storage Indication Method – A method of routing or moving an inflow hydrograph through a reservoir or detention structure. The method solves the mass conservation equation to determine an outflow hydrograph as it leaves the storage facility.

Storm Drainage Problem Areas – Areas which lack adequate stormwater collection and/or conveyance facilities and which present a hazard to persons or property. These areas are either documented in Appendix B of this Ordinance or identified by the municipality or municipal engineer.

Storm Sewer – A system of pipes or other conduits which carries intercepted surface runoff, street water and other wash waters, or drainage, but excludes domestic sewage and industrial wastes.

Stormwater – The surface runoff generated by precipitation reaching the ground surface.

Stormwater Drainage Wells – Wells for injection of stormwater to the subsurface that are regulated by the U.S. Environmental Protection Agency to protect underground sources of drinking water.

Stormwater Filters – Any number of structural mechanisms such as multi-chamber catch basins, sand/peat filters, sand filters, and so forth which are installed to intercept stormwater flow and remove pollutants prior to discharge. Typically, these systems require periodic maintenance and clean out.

Stormwater Management Plan – The plan for managing stormwater runoff adopted by Lehigh and/or Northampton County for the Monocacy Creek Watershed as required by the Act of October 4, 1978, P.L. 864, (Act 167), as amended, and known as the “Stormwater Management Act”.

Stream – A Watercourse.

Subarea – The smallest unit of watershed breakdown for hydrologic modeling purposes for which the runoff control criteria have been established in the Stormwater Management Plan.

Subdivision – The division or redivision of a lot, tract or parcel of land by any means into two or more lots, tracts, parcels or other divisions of land including changes in existing lot lines for the purpose, whether immediate or future, of lease, partition by the court for distribution to heirs or devisees, transfer of ownership or building or lot development: provided, however, that the subdivision by lease of land for agricultural purposes into parcels of more than ten acres, not involving and new street or easement of access or any residential dwelling, shall be exempted.

Surface Waters – Perennial and intermittent streams, rivers, lakes, reservoirs, ponds, wetlands, springs, natural seeps and estuaries, excluding water at facilities approved for wastewater treatment such as wastewater treatment impoundments, cooling water ponds and constructed wetlands used as part of a wastewater treatment process.

Swale – A low-lying stretch of land which gathers or carries surface water runoff. See also Vegetated Swale.

Technical Best Management Practice Manual & Infiltration Feasibility Report, November 2002 – The report written by Cahill Associates that addresses the feasibility of infiltration in carbonate bedrock areas in the Little Lehigh Creek Watershed. The report is available at the Lehigh Valley Planning Commission offices.

Timber Harvesting Activities – Earth disturbance activities, including the construction of skid trails, logging roads, landing areas and other similar logging or silvicultural practices.

Trash/Debris Collectors – Racks, screens or other similar devices installed in a storm drainage system to capture coarse pollutants (trash, leaves, etc.).

Vegetated Buffers – Gently sloping areas that convey stormwater as sheet flow over a broad, densely vegetated earthen area, possibly coupled with the use of level spreading devices. As water quality BMPs, vegetated buffers serve to filter pollutants from runoff and promote infiltration. Vegetated buffers should be situated on minimally disturbed soils, have low-flow velocities and extended residence times. Vegetated buffers may be, but are not restricted to, use in riparian (streamside) conditions.

Vegetated Roofs – Vegetated systems installed on roofs that generally consist of a waterproof layer, a root-barrier, drainage layer (optional), growth media, and suitable vegetation. Vegetated roofs store and eventually evapotranspire the collected rooftop rainfall; overflows may be provided for larger storms.

Vegetated Swales – Vegetated earthen channels designed to convey and possibly treat stormwater. As water quality BMPs, these are broad, shallow, densely vegetated, earthen channels designed to treat stormwater through infiltration, evapotranspiration, and sedimentation. Swales should be gently sloping with low flow velocities to prevent erosion. Check dams may be added to enhance performance.

Vegetated/Surface BMP – A BMP designed to provide vegetative uptake and soil renovation or surface infiltration of runoff. Capture/reuse BMPs are included if the captured runoff is applied to vegetated areas. Examples include bioretention and surface infiltration basins.

Watercourse – Any channel of conveyance of surface water having defined bed and banks, whether natural or artificial, with perennial or intermittent flow.

Water Quality Inserts – Any number of commercially available devices that are inserted into storm inlets to capture sediment, oil, grease, metals, trash, debris, etc.

Water Quality Volume (WQv) – The increase in runoff volume on a development site associated with a 2-year, 24-hour storm event.

Waters of the 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 water, or parts thereof, whether natural or artificial, within or on the boundaries of this Commonwealth.

Watershed – The entire region or area drained by a river or other body of water, whether natural or artificial.

Wet Detention Ponds – Basins that provide for necessary stormwater storage as well as a permanent pool of water. To be successful, wet ponds must have adequate natural hydrology (both runoff inputs as well as soils and water table which allow for maintenance of a permanent pool of water) and must be able to support a healthy aquatic community so as to avoid creation of mosquito and other health and nuisance problems.

ARTICLE 3 STORMWATER MANAGEMENT REQUIREMENTS

SECTION 301. GENERAL REQUIREMENTS

A. All Regulated Activities in the municipality shall be subject to the stormwater management requirements of this Ordinance.

B. Storm drainage systems shall be designed to preserve natural watercourses except as modified by stormwater detention facilities, recharge facilities, water quality facilities, pipe systems or open channels consistent with this Ordinance.

C. The existing locations of concentrated drainage discharge onto adjacent property shall not be altered without written approval of the affected property owner(s).

D. Areas of existing diffused drainage discharge onto adjacent property shall be managed such that, at minimum, the peak diffused flow does not increase in the general direction of discharge, except as otherwise provided in this Ordinance. If diffused flow is proposed to be concentrated and discharged onto adjacent property, the developer must obtain the written approval of the affected property owner(s). Areas of existing diffused drainage discharge shall be subject to any applicable release rate criteria in the general

direction of existing discharge whether they are proposed to be concentrated or maintained as diffused drainage areas.

E. Where a site is traversed by watercourses other than those for which a 100-year floodplain is defined by the municipality, there shall be provided drainage easements conforming substantially with the line of such watercourses. The width of any easement shall be adequate to provide for unimpeded flow of storm runoff based on calculations made in conformance with Section 308 for the 100-year return period runoff and to provide a freeboard allowance of one-half (0.5) foot above the design water surface level. The terms of the easement shall prohibit excavation, the placing of fill or structures, and any alterations which may adversely affect the flow of stormwater within any portion of the easement. Also, periodic maintenance of the easement to ensure proper runoff conveyance shall be required. Watercourses for which the 100-year floodplain is formally defined are subject to the applicable municipal floodplain regulations.

F. Post construction BMPs shall be designed, installed, operated and maintained to meet the requirements of the Clean Streams Law and implementing regulations, including the established practices in 25 Pa. Code Chapter 102 and the specifications of this Ordinance as to prevent accelerated erosion in watercourse channels and at all points of discharge.

G. No Earth Disturbance Activities associated with any Regulated Activities shall commence until approval by the municipality of a plan which demonstrates compliance with the requirements of this Ordinance.

H. Techniques described in Appendix F (Low Impact Development Practices) of this Ordinance are encouraged because they reduce the costs of complying with the requirements of this Ordinance and the State Water Quality Requirements.

I. Infiltration for stormwater management is encouraged where soils and geology permit, consistent with the provisions of this Ordinance and, where appropriate, the Recommendation Chart for Infiltration Stormwater Management BMPs in Carbonate Bedrock in Appendix D.

SECTION 302. PERMIT REQUIREMENTS BY OTHER GOVERNMENT ENTITIES

A. Other regulations contain independent permit requirements that apply to certain Regulated and Earth Disturbance Activities eligible for authorization by the Municipality in accordance with the permitting requirements in this Ordinance. Permit requirements pursuant to those other regulations must be met prior to commencement, and during the conduct, of such Regulated and Earth Disturbance Activities, as applicable:

1. All Regulated and Earth Disturbance Activities subject to permit requirements by DEP under regulations at 25 Pa. Code Chapter 102.

2. Work within natural drainageways subject to permit by DEP under 25 Pa. Code Chapter 102 and Chapter 105.

3. Any stormwater management facility that would be located in or adjacent to surface waters, including wetlands, subject to permit by DEP under 25 Pa. Code Chapter 105.

4. Culverts, bridges, storm sewers or any other facilities which must pass or convey flows from the tributary area and any facility which may constitute a dam subject to permit by DEP under 25 Pa. Code Chapter 105.

5. Projects that involve use of PennDOT right-of-way, or that involve new discharges onto or toward PennDOT right-of-way, are subject to the requirements, including the permitting requirements, of Title 67, Chapter 441 of the Pennsylvania Code.

SECTION 303. EROSION AND SEDIMENT CONTROL DURING REGULATED EARTH DISTURBANCE ACTIVITIES

A. No Regulated Earth Disturbance Activities within the municipality shall commence until approval by the municipality of an Erosion and Sediment Control Plan for construction activities. Written approval by DEP or a delegated County Conservation District shall satisfy this requirement.

B. A written Erosion and Sediment Control Plan is required by DEP regulations for any Earth Disturbance Activity under Pa. Code § 102.4(b).

C. A DEP NPDES Stormwater Discharges Associated with Construction Activities Permit is required for Regulated Earth Disturbance Activities of one acre or greater under Pa. Code Chapter 92.

D. Evidence of any necessary permit(s) for Regulated Earth Disturbance Activities from the appropriate DEP regional office or County Conservation District must be provided to the municipality before the commencement of an Earth Disturbance Activity.

E. A copy of the Erosion and Sediment Control Plan and any permit, as required by DEP regulations, shall be available at the project site at all times.

SECTION 304. POST CONSTRUCTION WATER QUALITY CRITERIA

A. No Regulated Earth Disturbance Activities within the municipality shall commence until approval by the municipality of a Drainage Plan which demonstrates compliance with this Ordinance.

B. The Water Quality Volume (WQv) shall be captured and treated with Vegetated/Surface and/or Direct Recharge/Subsurface BMPs. The WQv shall be calculated as the difference in runoff volume from pre-development to post-development for the 24-hour, 2-year return period storm. This may be calculated using either the Soil-Cover-Complex Method or Rational Method using the 2-year rainfall depth as noted in Section 308.I. The effect of closed depressions on the site shall be considered in this calculation. The WQv shall be captured and treated in a manner consistent with the standards outlined in Section 305 of the Ordinance.

C. The WQv shall be calculated for each post-development drainage direction on a site for sizing BMPs. Site areas having no impervious cover and no proposed disturbance during development may be excluded from the WQv calculations and do not require treatment.

D. The applicant shall document the bedrock type(s) present on the site from published sources. Any apparent boundaries between carbonate and non-carbonate bedrock shall be verified through more detailed site evaluations by a qualified geotechnical professional.

E. For each proposed Regulated Activity in the watershed where an applicant intends to use infiltration BMPs, the applicant shall conduct a Preliminary Site Investigation, including gathering data from published sources, a field inspection of the site, a minimum of one test pit and a minimum of two percolation tests, as outlined in Appendix G. This investigation will determine depth to bedrock, depth to the seasonal high water table, soil permeability and location of special geologic features, if applicable. This investigation may be done by a certified Sewage Enforcement Officer (SEO) except that the location(s) of special geologic features shall be verified by a qualified geotechnical professional.

F. Sites where applicants intend to use infiltration BMPs must meet the following criteria:

- Depth to bedrock below the invert of the BMP greater than or equal to 2 feet.
- Depth to seasonal high water table below the invert of the BMP greater than or equal to 2 feet; except for infiltration of residential roof runoff where the seasonal high water table must be below the invert of the BMP.

- Soil permeability (as measured using the standards listed in Appendix C of the Pennsylvania Stormwater Best Practices Manual) greater than or equal to 0.1 inches/hour and less than or equal to 10 inches per hour.
- Setback distances or buffers as follows:
 - 100 feet from water supply wells, or 50 feet in residential development.
 - 10 feet downgradient or 100 feet upgradient from building foundations.
- 50 feet from septic system drainfields.
- 50 feet from a geologic contact with carbonate bedrock unless a Preliminary Site Investigation is done in the carbonate bedrock to show the absence of special geologic features within 50 feet of the proposed infiltration area.

G. In entirely carbonate areas, where the applicant intends to use infiltration BMPs, the Preliminary Site Investigation described in Appendix G shall be conducted. For infiltration areas that appear feasible based on the Preliminary Site Investigation, the applicant shall conduct the Additional Site Investigation and Testing as outlined in Appendix G. The soil depth, percolation rate and proposed loading rate, each weighted as described in Section 308, along with the buffer from special geologic features shall be compared to the Recommendation Chart for Infiltration Stormwater Management BMPs in Carbonate Bedrock in Appendix D to determine if the site is recommended for infiltration. In addition to the recommendation from Appendix D, the conditions listed in Section 304.F are required for infiltration in carbonate areas.

H. Site areas proposed for infiltration shall be protected from disturbance and compaction except as necessary for construction of infiltration BMPs.

I. If infiltration of the entire WQv is not proposed, the remainder of the WQv shall be treated by acceptable BMPs for each discharge location. Acceptable BMPs are listed in Appendix H.

J. Stormwater runoff from Hot Spot land uses shall be pre-treated. Suggested methods of pre-treatment are listed in Appendix H.

K. The use of infiltration BMPs is prohibited on Hot Spot land use areas unless the applicant can demonstrate that existing and proposed site conditions, including any proposed runoff pre-treatment, create conditions suitable for runoff infiltration under this Ordinance.

L. Stormwater infiltration BMPs shall not be placed in or on a special geologic feature(s). Additionally, stormwater runoff shall not be discharged into existing on-site sinkholes.

M. Stormwater drainage wells may only be used for runoff from roof areas.

N. Applicants shall request, in writing, Public Water Suppliers to provide the Zone I Wellhead Protection radius, as calculated by the method outlined in the Pennsylvania Department of Environmental Protection Wellhead Protection regulations, for any public water supply well within 400 feet of the site. In addition to the setback distances specified in Section 304.F, infiltration is prohibited in the Zone I radius as defined and substantiated by the Public Water Supplier in writing. If the applicant does not receive a response from the Public Water Supplier, the Zone I radius is assumed to be 100 feet.

O. The municipality may, after consultation with DEP, approve alternative methods 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.

SECTION 305. GREEN INFRASTRUCTURE AND EXISTING WATER BALANCE PRESERVATION STANDARDS

A. The entire WQv as calculated in Section 304.B of this Ordinance shall be captured and treated by either Direct Recharge/Subsurface and/or Vegetated/Surface BMPs.

B. As much proposed impervious area as practical shall be directed to water quality BMPs.

C. Existing impervious area that is not proposed to be treated by Direct Recharge/Subsurface BMPs should be excluded from all water balance calculations.

D. Vegetated/Surface BMPs shall be employed "first" for the site to capture the equivalent of a minimum of 0.38 inches of runoff for each square foot of impervious area, unless proven not feasible by the applicant. For proposed impervious cover directed to multiple BMPs, the Vegetated/Surface BMP capture volume chart in Appendix C shall be used to determine overall site compliance. Direct Recharge/Subsurface BMPs may be used "first" for portions of the impervious cover provided the overall Vegetated/Surface BMP "first" standard is met.

E. A maximum of 30% of the total annual rainfall for a site may be directly recharged to groundwater using Direct Recharge/Subsurface BMPs, for runoff from impervious areas.

1. For development sites with greater than 33% proposed impervious cover:

a. If all impervious cover is directed to Vegetated/Surface BMPs to capture the entire 2-year, 24-hour event, the Direct Recharge standard is met.

b. Up to 33% of the site as impervious cover may be directed to Direct Recharge/Subsurface BMPs designed to capture the entire 2-year, 24-hour event provided the overall Vegetated/Surface BMP "first" standard is met. All remaining impervious cover shall be directed to Vegetated/Surface BMPs designed to capture the remainder of the WQv.

c. For Vegetated/Surface and/or Direct Recharge/Subsurface BMPs designed for runoff from impervious areas designed to capture less than the entire 2-year, 24-hour event, Appendix C shall be used to assure that the maximum Direct Recharge standard is met.

2. The maximum 30% Direct Recharge standard applies on an overall site basis, rather than in each drainage direction.

SECTION 306. STORMWATER MANAGEMENT DISTRICTS

A. Mapping of Stormwater Management Districts - To implement the provisions of the Monocacy Creek Watershed Stormwater Management Plan Update, the municipality is hereby divided into Stormwater Management Districts consistent with the Monocacy Creek Release Rate Map presented in the Plan Update. The boundaries of the Stormwater Management Districts are shown on an official map which is available for inspection at the municipal office. A copy of the official map at a reduced scale is included in Appendix A for general reference.

B. Release Rate Districts - There are six single release rate districts that differ in the extent to which the post-development runoff must be controlled. The release rate districts are 50%, 60%, 70%, 80%, 90% and 100%. Within a given district, the post-development peak rate of storm runoff must be controlled to the stated percentage of the pre-development peak rate of runoff for each of the 10-, 25-, 50- and 100-year return period storms to protect downstream watershed areas.

There is one dual release rate district. Within this district, the 10-year return period event needs to meet a 30% release rate, and the 25-year and higher return period events need to meet a 100% release rate.

C. Conditional No Detention Districts - These watershed areas peak very early with respect to the total watershed peak flow and contribute very minimal flow to the watershed peak flow. For that reason, these watershed areas may discharge post-development peak runoff without detention for the 10- through 100-year return periods without adversely affecting the total watershed peak flow. These areas are designated as "conditional" no detention areas because in certain instances the "local" runoff conveyance facilities, which transport runoff from the site to the main channel, may not have adequate capacity to safely transport the peak flows associated with no detention for a proposed development. In those instances, a 100% release rate control would have to be provided or, alternately, the capacity deficiency(ies) would have to be corrected.

SECTION 307. STORMWATER MANAGEMENT DISTRICT IMPLEMENTATION PROVISIONS

A. Applicants shall provide a comparative pre- and post construction stormwater management hydrograph analysis for each direction of discharge and for the site overall to demonstrate compliance with the provisions of this Ordinance.

B. Any stormwater management controls required by this Ordinance and subject to release rate criteria shall meet the applicable release rate criteria for each of the 2-, 10-, 25-, 50- and 100-year return period runoff events consistent with the calculation methodology specified in Section 308.

C. The exact location of the Stormwater Management District boundaries as they apply to a given development site shall be determined by mapping the boundaries using the two-foot topographic contours provided as part of the Drainage Plan. The District boundaries as originally drawn coincide with topographic divides or, in certain instances, are drawn from the intersection of the watercourse and a physical feature such as the confluence with another watercourse or a potential flow obstruction (e.g., road, culvert, bridge, etc.). The physical feature is the downstream limit of the subarea, and the subarea boundary is drawn from that point up slope to each topographic divide along the path perpendicular to the contour lines.

D. Any downstream capacity analysis conducted in accordance with this Ordinance shall use the following criteria for determining adequacy for accepting increased peak flow rates:

1. Natural or man-made channels or swales must be able to convey the increased runoff associated with a 2-year return period event within their banks at velocities consistent with protection of the channels from erosion.

2. Natural or man-made channels, swales, culverts, bridges, storm sewers or any other facilities which must convey flows from the tributary area must be able to convey the increased 25-year return period runoff.

E. For a proposed development site located within one release rate category subarea, the total runoff from the site shall meet the applicable release rate criteria. For development sites with multiple directions of runoff discharge, individual drainage directions may be designed for up to a 100% release rate so long as the total runoff from the site is controlled to the applicable release rate.

F. For a proposed development site located within two or more release rate category subareas, the peak discharge rate from any subarea shall be the pre-development peak discharge for that subarea multiplied by the applicable release rate. The calculated peak discharges shall apply regardless of whether the grading plan changes the drainage area by subarea. An exception to the above may be granted if discharges from multiple subareas re-combine in proximity to the site. In this case, peak discharge in any direction may be a 100% release rate provided that the overall site discharge meets the weighted average release rate.

G. For sites straddling major watershed divides (e.g., Monocacy Creek and Bushkill Creek), runoff volumes shall be managed to prevent diversion of runoff between watersheds, as practicable.

H. Within a release rate category area, for a proposed development site which has areas which drain to a closed depression(s), the design release from the site will be the lesser of (a) the applicable release rate flow assuming no closed depression(s) or (b) the existing peak flow actually leaving the site. In cases where (b) would result in an unreasonably small design release, the design discharge of less than or equal to the release rate will be determined by the available downstream conveyance capacity to the main channel calculated using Section 307.D and the minimum orifice criteria.

I. Off-site areas which drain through a proposed development site are not subject to release rate criteria when determining allowable peak runoff rates. However, on-site drainage facilities shall be designed to safely convey off-site flows through the development site using the capacity criteria in Section 307.D and the detention criteria in Section 308. In addition to the criteria in Section 307.D, on-site conveyance systems designed to carry runoff to a detention basin must be able to transport the basin's 100-year tributary flow either in-system, in-gutter or overland.

J. For development sites proposed to take place in phases, all detention ponds shall be designed to meet the applicable release rate(s) applied to all site areas tributary to the proposed pond discharge direction. All site tributary areas will be assumed as developed, regardless of whether all site tributary areas are proposed for development at that time. An exception shall be sites with multiple detention ponds in series where only the downstream pond must be designed to the stated release rate.

K. Where the site area to be impacted by a proposed development activity differs significantly from the total site area, only the proposed impact area shall be subject to the release rate criteria. The impact area includes any proposed cover or grading changes.

L. Development proposals which, through groundwater recharge or other means, do not increase either the rate or volume of runoff discharged from the site compared to pre-development are not subject to the release rate provisions of this Ordinance.

M. "No Harm" Water Quantity Option - For any proposed development site, the developer has the option of using a less restrictive runoff control if the developer can prove that special circumstances exist for the proposed development site and that "no harm" would be caused by discharging at a higher runoff rate than that specified by this Ordinance. Special circumstances are defined as any hydrologic or hydraulic aspects of the development itself not accommodated by the runoff control standards of this Ordinance. Proof of "no harm" would have to be shown from the development site through the remainder of the downstream drainage network to the confluence of the Monocacy Creek with the Lehigh River. Proof of "no harm" must be shown using the capacity criteria specified in Section 307.D. if downstream capacity analysis is a part of the "no harm" justification.

Attempts to prove "no harm" based upon downstream peak flow versus capacity analysis shall be governed by the following provisions:

1. Any available capacity in the downstream conveyance system as documented by a developer may be used by the developer only in proportion to his development site acreage relative to the total upstream undeveloped acreage from the identified capacity (i.e. if his site is 10% of the upstream undeveloped acreage, he may use up to 10% of the documented downstream available capacity).

2. Developer-proposed runoff controls which would generate increased peak flow rates at storm drainage problem areas would, by definition, be precluded from successful attempts to prove "no harm".

3. Any downstream capacity improvements proposed by the developer as part of a "no harm" justification would be designed using the capacity criteria specified in Section 307.D. Peak flow contributions to the proposed improvements shall be calculated as the larger of: (1) assuming the local watershed is in the existing condition, or (2) assuming that the local watershed is developed per current zoning and using the specified runoff controls.

Any “no harm” justifications shall be submitted by the developer as part of the Drainage Plan submission per Article 4. Developers submitting “no harm” justifications must still meet all of the water quality requirements in Section 304. The municipality will process all eligible “no harm” requests in accordance with Section 304.O.

N. Capacity Improvements - In certain instances, local drainage conditions may dictate more stringent levels of runoff control than those based upon protection of the entire watershed. In these instances, if the developer could prove that it would be feasible to provide capacity improvements to relieve the capacity deficiency in the local drainage network, then the capacity improvements could be provided by the developer in lieu of runoff controls on the development site. Peak flow calculations shall be done assuming that the local watershed is in the existing condition and then assuming that the local watershed is developed per current zoning and using the specified runoff controls. Any capacity improvements would be designed using the larger of the above peak flows and the capacity criteria specified in Section 307.D. All new development in the entire subarea(s) within which the proposed development site is located shall be assumed to implement the developer’s proposed discharge control, if any.

O. Release Rates need to be met year round. Designs involving BMPs that function differently in winter versus non-winter conditions (e.g., capture/reuse with spray irrigation shut off for the winter) must still meet release rates during the winter.

SECTION 308. CALCULATION METHODOLOGY

A. Stormwater runoff from all development sites shall be calculated using either the Rational Method or the Soil-Cover-Complex methodology.

B. Infiltration BMP loading rate percentages in the Recommendation Chart for Infiltration Stormwater Management BMPs in Carbonate Bedrock in Appendix D shall be calculated as follows:

$$\frac{\text{Area Tributary to infiltration BMP}}{\text{Base Area of infiltration BMP}} * 100\%$$

The area tributary to the infiltration BMP shall be weighted as follows:

All disturbed areas to be made impervious:	weight at 100%
All disturbed areas to be made pervious:	weight at 50%
All undisturbed pervious areas:	weight at 0%
All existing impervious areas:	weight at 100%

C. The design of any detention basin intended to meet the requirements of this Ordinance shall be verified by routing the design storm hydrograph through the proposed basin using the storage indication method or other methodology demonstrated to be more appropriate. For basins designed using the Rational Method technique, the design hydrograph for routing shall be either the Universal Rational Hydrograph or another Rational hydrograph that closely approximates the volume of the Universal Rational Hydrograph.

D. BMPs designed to store or infiltrate runoff and discharge to surface runoff or pipe flow shall be routed using the storage indication method.

E. BMPs designed to store or infiltrate runoff and discharge to surface runoff or pipe flow shall provide storage volume for the full WQv below the lowest outlet invert.

F. Wet Detention Ponds designed to have a permanent pool for the WQv shall assume that the permanent pool volume below the primary outlet is full at the beginning of design event routing for the purposes of evaluating peak outflows.

G. All above-ground stormwater detention facilities shall provide a minimum 0.5 feet of freeboard above the maximum pool elevation associated with the 2- through 100-year runoff events, or an additional ten percent of the 100-year storage volume as freeboard volume, whichever is greater. All below-ground stormwater detention and infiltration facilities shall have an additional ten percent of the 100-year storage volume available within the storage medium, as well as a minimum of 0.5 feet of freeboard. The freeboard shall be measured from the maximum pool elevation to the invert of the emergency spillway for above-ground facilities, and from the maximum pool elevation to the lowest overflow elevation for below-ground facilities. The 2- through 100-year storm events shall be controlled by the primary outlet structure. An emergency spillway for each above-ground basin shall be designed to pass the 100-year return frequency storm peak basin inflow rate with a minimum 0.5 foot freeboard measured to the top of basin. The freeboard criteria shall be met considering any off-site areas tributary to the basin as developed, as applicable. Exceptions to the freeboard requirements are as follows:

1. Bioretention BMPs with a ponded depth less than or equal to 0.5 feet are exempt from the freeboard requirements.

2. Small detention basins, with a ponded depth less than or equal to 1.5 feet or having a depth to the top of the berm less than or equal to 2.5 feet, may provide twenty percent additional storage volume measured from the maximum ponded depth to the invert of the emergency spillway in lieu of the above requirements. The depth of the emergency spillway must be sufficient to pass either two times the 100-year peak or the 100-year peak with 0.2' of freeboard to the top of berm, whichever is greater.

3. Small infiltration basins, with a ponded depth less than or equal to 1.5 feet or having a depth to the top of the berm less than or equal to 2.5 feet, may provide twenty percent additional storage volume measured from the maximum ponded depth to the top of the berm in lieu of the above requirements. In this case, an emergency spillway is only necessary if runoff in excess of the basin volume would cause harm to downstream owners. If a spillway is necessary, it must be sufficiently sized to pass the 100-year peak inflow.

If this detention facility is considered to be a dam as per DEP Chapter 105, the design of the facility must be consistent with the Chapter 105 regulations, and may be required to pass a storm greater than the 100-year event.

H. The minimum circular orifice diameter for controlling discharge rates from detention facilities shall be three (3) inches. Designs where a lesser size orifice would be required to fully meet release rates shall be acceptable with a 3-inch orifice provided that as much of the site runoff as practical is directed to the detention facilities. The minimum 3-inch diameter does not apply to the control of the WQv.

I. Runoff calculations using the Soil-Cover-Complex method shall use the Natural Resources Conservation Service Type II 24-hour rainfall distribution. The 24-hour rainfall depths for the various return periods to be used consistent with this Ordinance may be taken from NOAA Atlas 14, Precipitation Frequency Atlas of the United States, current volume, or the Pennsylvania Department of Transportation Drainage Manual, 2015 Edition for Region 4. The following values are taken from the Drainage Manual:

<u>Return Period</u>	<u>24-Hour Rainfall Depth</u>
1-year	2.64 inches
2-year	3.16 inches
5-year	3.91 inches
10-year	4.57 inches
25-year	5.60 inches
50-year	6.53 inches
100-year	7.63 inches

A graphical and tabular presentation of the Type II-24 hour distribution is included in Appendix C.

J. Runoff calculations using the Rational Method shall use rainfall intensities consistent with appropriate times of concentration and return periods and NOAA Atlas 14, Precipitation Frequency Atlas of the United States Precipitation and Intensity Charts, current volume, as presented in Appendix C.

K. Runoff Curve Numbers (CN's) to be used in the Soil-Cover-Complex method shall be based upon the table presented in Appendix C.

L. Runoff coefficients for use in the Rational Method shall be based upon the table presented in Appendix C.

M. All time of concentration calculations shall use a segmental approach which may include one or all of the flow types below:

1. Sheet Flow (overland flow) calculations shall use either the NRCS average velocity chart (Figure 3-1, Technical Release-55, 1975) or the modified kinematic wave travel time equation (equation 3-3, NRCS TR-55, June 1986). If using the modified kinematic wave travel time equation, the sheet flow length shall be limited to 50 feet for designs using the Rational Method and limited to 150 feet for designs using the Soil-Cover-Complex method.

2. Shallow Concentrated Flow travel times shall be determined from the watercourse slope, type of surface and the velocity from Figure 3-1 of TR-55, June 1986.

3. Open Channel Flow travel times shall be determined from velocities calculated by the Manning Equation. Bankfull flows shall be used for determining velocities. Manning 'n' values shall be based on the table presented in Appendix C.

4. Pipe Flow travel times shall be determined from velocities calculated using the Manning Equation assuming full flow and the Manning 'n' values from Appendix C.

N. If using the Rational Method, all pre-development calculations for a given discharge direction shall be based on a common time of concentration considering both on-site and any off-site drainage areas. If using the Rational Method, all post-development calculations for a given discharge direction shall be based on a common time of concentration considering both on-site and any off-site drainage areas.

O. When conditions exist such that a proposed detention facility may experience a tailwater effect, the basin shall be analyzed without any tailwater effect for all storm events for comparison against the required Release Rates. An additional routing of the 100-year storm with the full tailwater effect shall be performed to check that the basin has sufficient storage to contain the 100-year tributary flow and meet freeboard requirements.

P. The Manning Equation shall be used to calculate the capacity of watercourses. Manning 'n' values used in the calculations shall be consistent with the table presented in Appendix C or other appropriate standard engineering 'n' value resources. Pipe capacities shall be determined by methods acceptable to the municipality.

Q. The Pennsylvania DEP, Chapter 105, Rules and Regulations, apply to the construction, modification, operation or maintenance of both existing and proposed dams, water obstructions and encroachments throughout the watershed. Criteria for design and construction of stormwater management facilities according to this Ordinance may differ from the criteria that are used in the permitting of dams under the Dam Safety Program.

ARTICLE 4 DRAINAGE PLAN REQUIREMENTS

SECTION 401. GENERAL REQUIREMENTS

For any of the Regulated Activities of this Ordinance, prior to the final approval of subdivision and/or land development plans, or the issuance of any permit, or the commencement of any Regulated Earth Disturbance Activity, the owner, subdivider, developer or his agent shall submit a Drainage Plan and receive municipal approval of the Plan.

SECTION 402. EXEMPTIONS

Exemptions from the Drainage Plan Requirements are as specified in Section 106.

SECTION 403. DRAINAGE PLAN CONTENTS

The following items shall be included in the Drainage Plan:

A. General

1. General description of project.
2. General description of proposed permanent stormwater controls.
3. The name and address of the project site, the name and address of the owner of the property and the name of the individual or firm preparing the Drainage Plan.

B. Map(s) of the Project Area Showing:

1. The location of the project relative to highways, municipalities or other identifiable landmarks.
2. Existing contours at intervals of two (2) feet. In areas of steep slopes (greater than 15%), five-foot contour intervals may be used. Off-site drainage areas impacting the project including topographic detail.
3. Streams, lakes, ponds or other bodies of water within the project area.
4. Other features including flood hazard boundaries, existing drainage swales, wetlands, closed depressions, sinkholes and areas of natural vegetation to be preserved.
5. Locations of proposed underground utilities, sewers and water lines. The locations of all existing and proposed utilities, sanitary sewers and water lines within 50 feet of property lines of the project site.
6. An overlay showing soil types and boundaries based on the county soil survey, as applicable, latest edition. Any hydric soils present on the site should be identified as such.
7. An overlay showing geologic types, boundaries and any special geologic features present on the site.
8. Proposed changes to land surface and vegetative cover.
9. Proposed structures, roads, paved areas and buildings.

10. Final contours at intervals of two (2) feet. In areas of steep slopes (greater than 15%), five-foot contour intervals may be used.

11. Stormwater Management District boundaries applicable to the site.

12. Clear identification of the location and nature of permanent stormwater BMPs.

13. An adequate access easement around all stormwater BMPs that would provide municipal ingress to and egress from a public right-of-way.

14. A schematic showing all tributaries contributing flow to the site and all existing man-made features beyond the property boundary that would be affected by the project.

15. The location of all public water supply wells within 400 feet of the project and all private water supply wells within 100 feet of the project.

C. Stormwater Management Controls and BMPs

1. All stormwater management controls and BMPs shall be shown on a map and described, including:

a. Groundwater recharge methods such as seepage pits, beds or trenches. When these structures are used, the locations of septic tank infiltration areas and wells shall be shown.

b. Other control devices or methods such as roof-top storage, semi-pervious paving materials, grass swales, parking lot ponding, vegetated strips, detention or retention ponds, storm sewers, etc.

2. All calculations, assumptions and criteria used in the design of the BMPs shall be shown.

3. All site testing data used to determine the feasibility of infiltration on a site.

4. All details and specifications for the construction of the stormwater management controls and BMPs.

D. The BMP Operations and Maintenance Plan, as required in Article 7, describing how each permanent stormwater BMP will be operated and maintained and the identity of the person(s) responsible for operations and maintenance. A statement must be included, signed by the landowner, acknowledging that the stormwater BMPs are fixtures that cannot be altered or removed without approval by the municipality.

SECTION 404. PLAN SUBMISSION

A. For Regulated Activities specified in Sections 105.A. and 105.B:

1. The Drainage Plan shall be submitted by the developer to the municipal secretary (or other appropriate person) as part of the Preliminary Plan submission for the subdivision or land development.

2. Four (4) copies of the Drainage Plan shall be submitted.

3. Distribution of the Drainage Plan will be as follows:

a. One (1) copy to the municipal governing body.

b. One (1) copy to the municipal engineer.

c. Two (2) copies to the Lehigh Valley Planning Commission (LVPC), except for Drainage Plans involving less than 10,000 square feet of additional impervious cover.

4. Drainage Plans involving more than 10,000 square feet of additional impervious cover shall be submitted by the developer (possibly through the municipality) to the LVPC as part of the Preliminary Plan submission. The LVPC will conduct an advisory review of the Drainage Plan for consistency with the Monocacy Creek Watershed Stormwater Management Plan. The LVPC will not review details of the Erosion and Sedimentation Plan or the BMP Operations and Maintenance Plan.

a. Two (2) copies of the Drainage Plan shall be submitted.

b. The LVPC will provide written comments to the developer and the municipality, within a time frame consistent with established procedures under the Municipalities Planning Code, as to whether the Drainage Plan has been found to be consistent with the Stormwater Management Plan.

B. For Regulated Activities specified in Sections 105.C. and 105.D, the Drainage Plan shall be submitted by the developer to the municipal building permit officer as part of the building permit application.

C. For Regulated Activities specified in Sections 105.E, 105.F. and 105.G:

1. The Drainage Plan shall be submitted by the developer to the Lehigh Valley Planning Commission for coordination with the DEP permit application process, as needed, under Chapter 105 (Dam Safety and Waterway Management), Chapter 106 (Flood Plain Management) of DEP's Rules and Regulations and the NPDES regulations.

2. One (1) copy of the Drainage Plan shall be submitted.

D. Earth moving for all Regulated Activities under Section 105 shall be conducted in accordance with the current Federal and State regulations relative to the NPDES and DEP Chapter 102 regulations.

SECTION 405. DRAINAGE PLAN REVIEW

A. The municipality shall review the Drainage Plan, including the BMP Operations and Maintenance Plan, for consistency with this Ordinance. The municipality shall also review the Drainage Plan against any additional storm drainage provisions contained in the municipal subdivision and land development or zoning ordinance, as applicable.

B. The municipality shall notify the applicant in writing whether the Drainage Plan, including the BMP Operations and Maintenance Plan, is approved, consistent with time frames as established by the current Pennsylvania Municipalities Planning Code.

C. The municipality shall not approve any subdivision or land development (Regulated Activities 105.A. and 105.B.) or building permit application (Regulated Activities 105.C. and 105.D.) if the Drainage Plan has been found to be inconsistent with this Ordinance.

D. The municipality may require an "As-Built Survey" of all stormwater BMPs and an explanation of any discrepancies with the Drainage Plan.

SECTION 406. MODIFICATION OF PLANS

A modification to a Drainage Plan for a proposed development site which involves a change in control methods or techniques, or which involves the relocation or redesign of control measures, or which is

necessary because soil or other conditions are not as stated on the Drainage Plan (as determined by the municipality) shall require a resubmission of the modified Drainage Plan consistent with Section 404 subject to review per Section 405 of this Ordinance.

SECTION 407. HARDSHIP WAIVER PROCEDURE

The municipality may hear requests for waivers where it is alleged that the provisions of this Ordinance inflict unnecessary hardship upon the applicant. The waiver request shall be in writing and accompanied by the requisite fee based upon a fee schedule adopted by the municipality. A copy of the waiver request shall be provided to each of the following: municipality, municipal engineer, municipal solicitor and Lehigh Valley Planning Commission. The request shall fully document the nature of the alleged hardship.

The municipality may accept a waiver request provided that the Municipality determines that in each case the request satisfies all of the following findings:

1. That there are unique physical circumstances or conditions, including irregularity of lot size or shape, or exceptional topographical or other physical conditions peculiar to the particular property, and that the unnecessary hardship is due to such conditions, and not the circumstances or conditions generally created by the provisions of this Ordinance in the Stormwater Management District in which the property is located;
2. That because of such physical circumstances or conditions, there is no possibility that the property can be developed in strict conformity with the provisions of this Ordinance, and that the authorization of a waiver is therefore necessary to enable the reasonable use of the property;
3. That such unnecessary hardship has not been created by the applicant;
4. That the waiver, if authorized, will represent the minimum waiver that will afford relief and will represent the least modification possible of the regulation in issue; and
5. That financial hardship is not the criteria for granting of a hardship waiver.

In processing any waiver request, the municipality may attach such conditions and safeguards as it may deem necessary to implement the purposes of this Ordinance. If a Hardship Waiver is granted, the applicant must still manage the quantity, velocity, direction and quality of resulting storm runoff as is necessary to prevent injury to health, safety or other property.

E. For Regulated Activities described in Section 105.A. and B., the [municipal governing body] shall hear requests for and decide on hardship waiver requests on behalf of the municipality.

F. For Regulated Activities in Section 105.C, D., E., F. and G., the Zoning Hearing Board shall hear requests for and decide on hardship waiver requests on behalf of the municipality.

G. The municipality will process all eligible waiver requests in accordance with the provisions of Section 304.O.

ARTICLE 5 INSPECTIONS

SECTION 501. SCHEDULE OF INSPECTIONS

A. DEP or its designees (e.g., County Conservation District) normally ensure compliance with any permits issued, including those for stormwater management. In addition to DEP compliance programs, the municipality or its designee may inspect all phases of the construction, operations, maintenance and any other implementation of stormwater BMPs.

B. During any stage of the Regulated Earth Disturbance Activities, if the municipality or its designee determines that any BMPs are not being implemented in accordance with permit conditions or this Ordinance, the municipality may suspend or revoke any existing permits issued by the municipality or other approvals issued by the municipality until the deficiencies are corrected.

ARTICLE 6 FEES AND EXPENSES

SECTION 601. GENERAL

The municipality may charge a reasonable fee for review of the Drainage Plan, including the BMP Operations and Maintenance Plan, to defray review costs incurred by the municipality. The applicant shall pay all such fees.

SECTION 602. EXPENSES COVERED BY FEES

The fees required by this Ordinance shall at a minimum cover:

A. The review of the Drainage Plan, including the BMP Operations and Maintenance Plan, by the municipality.

B. The site inspection.

C. The inspection of required controls and improvements during construction.

D. The final inspection upon completion of the controls and improvements required in the plan.

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

F. Administrative and clerical costs.

ARTICLE 7 STORM WATER BMP OPERATIONS AND MAINTENANCE PLAN REQUIREMENTS

SECTION 701. GENERAL REQUIREMENTS

No Regulated Earth Disturbance Activities within the municipality shall commence until approval by the municipality of the BMP Operations and Maintenance Plan which describes how the permanent (e.g., post construction) stormwater BMPs will be properly operated and maintained.

SECTION 702. RESPONSIBILITIES FOR OPERATIONS AND MAINTENANCE OF BMPS

A. The BMP Operations and Maintenance Plan for the project site shall establish responsibilities for the continuing operation and maintenance of all permanent stormwater BMPs, as follows:

1. If a Plan includes structures or lots which are to be separately owned and in which streets, sewers and other public improvements are to be dedicated to the municipality, stormwater BMPs may also be dedicated to and maintained by the municipality.

2. If a Plan includes operations and maintenance by a single owner or if sewers and other public improvements are to be privately owned and maintained, then the operation and maintenance of stormwater BMPs shall be the responsibility of the owner or private management entity.

B. The municipality shall make the final determination on the continuing operations and maintenance responsibilities. The municipality reserves the right to accept or reject the operations and maintenance responsibility for any or all of the stormwater BMPs.

SECTION 703. ADHERENCE TO APPROVED BMP OPERATIONS AND MAINTENANCE PLAN

It shall be unlawful to alter or remove any permanent stormwater BMP required by an approved BMP Operations and Maintenance Plan or to allow the property to remain in a condition which does not conform to an approved BMP Operations and Maintenance Plan unless an exception is granted in writing by the municipality.

SECTION 704. OPERATIONS AND MAINTENANCE AGREEMENT FOR PRIVATELY-OWNED STORMWATER BMPS

A. The property owner shall sign an operations and maintenance agreement with the municipality covering all stormwater BMPs that are to be privately- owned. The agreement shall be substantially the same as the agreement in Appendix E of this Ordinance.

B. Other items may be included in the agreement where determined by the municipality to be reasonable or necessary to guarantee the satisfactory operation and maintenance of all permanent stormwater BMPs. The agreement shall be subject to the review and approval of the municipality.

SECTION 705. STORMWATER MANAGEMENT EASEMENTS

Stormwater management easements shall be provided by the property owner if necessary for access for inspections and maintenance or for preservation of stormwater conveyance, infiltration, detention areas and other BMPs by persons other than the property owner. The purpose of the easement shall be specified in any agreement under Section 704.

SECTION 706. RECORDING OF APPROVED BMP OPERATIONS AND MAINTENANCE PLAN AND RELATED AGREEMENTS

A. The owner of any land upon which permanent BMPs will be placed, constructed or implemented, as described in the BMP Operations and Maintenance Plan, shall record the following documents in the county Office of the Recorder of Deeds for Lehigh or Northampton County, as applicable, within 90 days of approval of the BMP Operations and Maintenance Plan by the municipality:

1. The Operations and Maintenance Plan or a summary thereof.

2. Operations and Maintenance Agreements under Section 704.
3. Easements under Section 705.

B. The municipality may suspend or revoke any approvals granted for the project site upon discovery of the failure of the owner to comply with this Section.

SECTION 707. MUNICIPAL STORMWATER BMP OPERATIONS AND MAINTENANCE FUND

A. Persons installing stormwater BMPs shall be required to pay a specified amount to the Municipal Stormwater BMP Operations and Maintenance Fund to help defray costs of operations and maintenance activities. The amount may be determined as follows:

1. If the BMP is to be privately-owned and maintained, the amount shall cover the cost of periodic inspections by the municipality in perpetuity, as determined by the municipality.
2. If the BMP is to be owned and maintained by the municipality, the amount shall cover the estimated costs for operation and maintenance in perpetuity, as determined by the municipality.
3. The amount shall then be converted to present worth of the annual series values.

B. If a BMP is proposed that also serves as a recreation facility (e.g., ball field, lake), the municipality may adjust the amount due accordingly.

ARTICLE 8 PROHIBITIONS

SECTION 801. PROHIBITED DISCHARGES AND CONNECTIONS

A. Any drain or conveyance, whether on the surface or subsurface, that allows any non-stormwater including sewage, process wastewater, and wash water to enter a regulated small municipal separate storm sewer (MS4) or to enter the surface waters of this Commonwealth is prohibited.

B. 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 paragraph C below and (2) discharges authorized under a state or federal permit.

C. The following discharges are authorized unless they are determined to be significant contributors to pollution a regulated small MS4 or to the waters of this Commonwealth:

Discharges or flows from firefighting activities.

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).

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

Diverted stream flows and springs.

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

Non-contaminated HVAC condensation and water from geothermal systems.

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

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

D. In the event that the municipality or DEP determines that any of the discharges identified in Subsection C 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.

SECTION 802. ROOF DRAINS AND SUMP PUMPS

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

SECTION 803. ALTERATION OF STORMWATER MANAGEMENT BMPs

No person shall modify, remove, fill, landscape, or alter any stormwater management BMPs, facilities, areas, or structures that were installed as a requirement of this Ordinance without the written approval of the Municipality.

ARTICLE 9 RIGHT OF ENTRY, NOTIFICATION AND ENFORCEMENT

SECTION 901. RIGHT OF ENTRY

A. Upon presentation of proper credentials and with the consent of the land owner, duly authorized representatives of the municipality may enter at reasonable times upon any property within the municipality to inspect the implementation, condition or operation and maintenance of the stormwater BMPs or to investigate or ascertain the condition of the subject property in regard to any aspect regulated by this Ordinance.

B. In the event that the land owner refuses admission to the property, duly authorized representatives of the municipality may seek an administrative search warrant issued by a district justice to gain access to the property.

SECTION 902. NOTIFICATION

A. Whenever the municipality finds that a person has violated a prohibition or failed to meet a requirement of this Ordinance, the municipality may order compliance by written notice to the responsible person. Such notice may require without limitation:

1. The name of the owner of record and any other person against whom the municipality intends to take action.

2. The location of the property in violation.

3. The performance of monitoring, analyses and reporting.
4. The elimination of prohibited connections or discharges.
5. Cessation of any violating discharges, practices or operations.
6. The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property.
7. Payment of a fine to cover administrative and remediation costs.
8. The implementation of stormwater BMPs.
9. Operation and maintenance of stormwater BMPs.

B. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of the violation(s). Said notice may further advise that should the violator fail to take the required action within the established deadline, the work will be done by the municipality or designee and the expense thereof, together with all related lien and enforcement fees, charges and expenses, shall be charged to the violator.

C. Failure to comply within the time specified shall also subject such person to the penalty provisions of this Ordinance. All such penalties shall be deemed cumulative and shall not prevent the municipality from pursuing any and all other remedies available in law or equity.

SECTION 903. PUBLIC NUISANCE

- A. The violation of any provision of this Ordinance is hereby deemed a Public Nuisance.
- B. Each day that an offense continues shall constitute a separate violation.

SECTION 904. SUSPENSION AND REVOCATION OF PERMITS AND APPROVALS

A. Any building, land development or other permit or approval issued by the municipality may be suspended or revoked by the municipality for:

1. Non-compliance with or failure to implement any provision of the permit.
2. A violation of any provision of this Ordinance.
3. The creation of any condition or the commission of any act during construction or development which constitutes or creates a hazard or nuisance, pollution or which endangers the life or property of others.

B. A suspended permit or approval shall be reinstated by the municipality when:

1. The municipality or designee has inspected and approved the corrections to the stormwater BMPs or the elimination of the hazard or nuisance.
2. The municipality is satisfied that the violation of the ordinance, law or rule and regulation has been corrected.

3. Payment of all municipal fees, costs and expenses related to or arising from the violation has been made.

C. A permit or approval which has been revoked by the municipality cannot be reinstated. The applicant may apply for a new permit under the procedures outlined in this Ordinance.

SECTION 905. PENALTIES

A. Any person, partnership or corporation who or which has violated the provisions of this Ordinance shall, upon being found liable therefore in a civil enforcement proceeding commenced by the municipality, pay a judgment of not more than Five Hundred (\$500.00) Dollars plus all court costs, including reasonable attorney's fees incurred by the municipality as a result thereof. No judgment shall commence or be imposed, levied or payable until the date of the determination of a violation by the district justice. If the defendant neither pays nor timely appeals the judgment, the municipality may enforce the judgment pursuant to a separate violation, unless the district justice, determining that there has been a violation, further determines that there was a good faith basis for the person, partnership, or corporation violating this Ordinance to have believed that there was no such violation, in which event there shall be deemed to have been only one such violation until the fifth (5th) day following the date of the determination of a violation by the district justice and thereafter each day that a violation continues shall constitute a separate violation.

B. The court of common pleas, upon petition, may grant an order of stay upon cause shown, tolling the per diem judgment pending a final adjudication of the violation and judgment.

C. Nothing contained in this Section shall be construed or interpreted to grant to any person or entity other than the municipality the right to commence any action for enforcement pursuant to this Section.

D. District justices shall have initial jurisdiction in proceedings brought under this Section.

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

SECTION 906. APPEALS

Any person aggrieved by any action of the municipality or its designee relevant to the provisions of this Ordinance may appeal using the appeal procedures established in the Pennsylvania Municipalities Planning Code.