

CHAPTER 8. WELLHEAD PROTECTION MODEL ORDINANCE

Chapter 3 provided an assessment of the current regulation of targeted activities and included recommendations for improved regulation for wellhead protection purposes. Implementation of those recommendations would, in part, require the adoption of specific ordinance provisions by the municipality(ies) where wellhead protection areas are established. A model municipal ordinance has been developed to implement the wellhead protection recommendations from Chapter 3. The ordinance is a single purpose wellhead protection ordinance which involves zoning standards, subdivision and land development standards and special wellhead protection requirements. The "Lehigh-Northampton County Wellhead Protection Model Ordinance" was prepared using the following documents as guides:

- Wellhead Protection Grant Final Report, Lehigh County Authority, February 1992
- Aquifer Protection Overlay Zone Ordinance, Borough of East Stroudsburg, Monroe County, Pa., Adopted July 1990
- Centre Region Groundwater Protection Report and Strategy, Centre Regional Planning Commission, February 1992
- Management Program for Control of Potential Sources of Contamination in Wellhead Protection Areas, Dover Township, York County, Pa., February 1992

Note that the model ordinance has not been subject to a legal review as part of this project. Adoption of these ordinance provisions by a municipality should only be accomplished subsequent to a thorough legal analysis by the municipality.

Presented as the remainder of this chapter is the "Lehigh-Northampton County Wellhead Protection Model Ordinance."

Joint Planning Commission, Lehigh-Northampton Counties
and R.K.R. Hess Associates, 1992, Wellhead Protection
Demonstration Project.

LEHIGH-NORTHAMPTON COUNTY
WELLHEAD PROTECTION MODEL ORDINANCE

ARTICLE I
GENERAL PROVISIONS

SECTION 101. STATEMENT OF FINDINGS

The governing body of the municipality finds that:

- A. The ground water underlying the municipality is a major source of its existing and future water supply, including drinking water.
- B. The ground water aquifers are integrally connected with, are recharged by, and flow into the surface waters, lakes and streams which constitute a major source of drinking water for the region.
- C. Accidental spills and discharges of toxic and hazardous materials may threaten the quality of such ground water supplies and related water resources in the municipality posing potential public health and safety hazards.
- D. Unless preventive measures are adopted to control the discharge and storage of toxic and hazardous materials within the municipality, spills and discharges of such materials will predictably occur and with greater frequency and degree of hazard by reason of increasing construction, commercial and industrial development, population and vehicular traffic in the municipality.

SECTION 102. PURPOSE

The purpose of this Ordinance is to protect the public health, safety and welfare through the preservation of the municipality's major ground water resources to ensure a future supply of safe and healthful drinking water for the municipality, local residents and employees, and the general public. The designation of Wellhead Protection Areas 1, 2 and 3 and careful regulation of land use, physical facilities and other activities within these areas can reduce the potential for ground water contamination.

SECTION 103. STATUTORY AUTHORITY

The municipality is empowered to regulate these activities under the provisions of the Pennsylvania Municipalities Planning Code (MPC) (Act of 1968, P.L. 805, No. 247 as reenacted and amended).

SECTION 104. ZONING ORDINANCE AND SUBDIVISION AND LAND DEVELOPMENT ORDINANCE AMENDMENTS

By this Ordinance ARTICLES II, III, IV, VI, VII, VIII and Appendix A are enacted as amendments to the municipal zoning ordinance. By this Ordinance, ARTICLES II, V, VIII and Appendix A are enacted as amendments to the municipal subdivision and land development ordinance.

SECTION 105. APPLICABILITY

This Ordinance shall only apply to those areas of the municipality which are located within Wellhead Protection Areas 1, 2 and 3 surrounding a protected public water supply well as delineated on an official map available for inspection at the municipal office. A map of the Wellhead Protection Areas is included in Appendix A for general reference.

This Ordinance regulates the following land uses, physical facilities and activities which have the potential to contaminate ground water:

- A. Light Industry
- B. Agricultural Operations
- C. Sewage Disposal
- D. Manufacturing
- E. Injection Wells
- F. Storage Tanks - Underground and Aboveground
- G. Disposal Facilities - Solid Waste, Dumpsites
- H. Sewage Sludge Land Application
- I. Subdivisions
- J. Land Developments

SECTION 106. 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 107. 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 108. 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 other applicable code, rule, act or ordinance.

**ARTICLE II
DEFINITIONS**

AGRICULTURAL OPERATIONS - Those operations which include tilling, cultivation and animal husbandry and which qualify as earthmoving pursuant to DER Chapter 102 Rules and Regulations.

CARBONATE BEDROCK - Limestone or dolomite rock formations formed by carbonate deposition in shallow sea waters.

CLOSED DEPRESSION - In a karst area, a distinctive bowl-shaped depression in the land surface. It is characterized by internal drainage, varying magnitude and an unbroken ground surface.

CONE OF DEPRESSION - The area surrounding a pumping well within which the water table elevation has been lowered due to ground water withdrawal.

CONSERVATION DISTRICT - The Northampton County Conservation District or Lehigh County Conservation District, as applicable.

CONSERVATION PLAN - An Erosion and Sedimentation Control Plan prepared for agricultural properties as required by Chapter 102 of the DER Rules and Regulations and as reviewed and approved by the Conservation District.

DER - The Pennsylvania Department of Environmental Resources.

DETENTION POND - A basin designed to retard stormwater runoff by temporarily storing the runoff and releasing it at a predetermined rate through a defined outlet structure.

ENVIRONMENTAL HAZARD SURVEY FORM - A document authorized by the Pennsylvania Worker and Community Right-to-Know Act which, if required by the Department of Labor and Industry for a facility, describes the hazardous substances emitted, discharged or disposed of from the workplace.

EPA - The Federal Environmental Protection Agency.

FRACTURE TRACE - Linear features in bedrock caused by erosion along fractures or zones of fractures and readily visible on aerial photographs.

GHOST LAKES - Transient surface water bodies formed in sinks and closed depressions after heavy precipitation, due to poor internal drainage. This poor drainage may be due to residual clay remaining after solution of limestone minerals.

HAZARDOUS MATERIAL - A product or waste, or combination of substances that because of the quantity, concentration, physical, chemical or infectious characteristics, if not properly treated, stored, transported, used or disposed of, or otherwise managed, would create a potential threat to public health through direct or indirect introduction into ground water resources and the subsurface environment which includes the soil and all subsequent materials located below. Such hazardous material includes, but is not limited to, materials which may be included on one or more of the following lists:

- Occupational Safety and Health Act, 29 CFR, Part 1910, Subpart Z - Extremely Hazardous Substance List.
- American Conference of Governmental Industrial Hygienists, Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment (latest edition).
- National Toxicology Program, Annual Report on Carcinogens (latest edition).
- International Agency for Research on Cancer Monographs (latest edition).
- Commonwealth of Pennsylvania, Department of Labor and Industry, Hazardous Substance List (latest edition).
- "Hazardous Substances" defined pursuant to Section 311 of the Federal Clean Water Act.
- "Toxic Materials" defined pursuant to Section 307 of the Federal Clean Water Act.
- "Hazardous Wastes" defined pursuant to Chapter 75 of DER Rules and Regulations.

- "Hazardous Wastes" defined pursuant to Section 101 of the Federal Resource Conservation and Recovery Act.

HAZARDOUS SUBSTANCE SURVEY FORM - A document required by the Pennsylvania Worker and Community Right-to-Know Act which provides a listing of all hazardous substances found in the workplace.

KARST - A type of topography characterized by closed depressions or sinkholes, caves, rock pinnacles and underground drainage, resulting from solution of limestone and dolomite bedrock.

LAND DEVELOPMENT - Any of the following activities:

- A. The improvement of one lot or two or more contiguous lots, tracts or parcels of land for any purpose involving:
 - 1. 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
 - 2. 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.
- B. A subdivision of land.
- C. Development in accordance with Section 503(1.1) of the Municipalities Planning Code.

LARGE VOLUME SUBSURFACE SEWAGE DISPOSAL SYSTEM - A sewage disposal facility which is designed to discharge directly to the soil profile, whether natural or enhanced, and which has a design capacity in excess of 10,000 gallons per day.

LARGE VOLUME SPRAY IRRIGATION SEWAGE DISPOSAL SYSTEM - A sewage disposal facility which is designed to treat wastewater with ultimate disposal of effluent being to the land surface via a spray mechanism and which is designed for more than 2,000 gallons per day.

LIGHT INDUSTRY - Industrial, commercial, public or retail establishments which engage in manufacturing, fabrication or service activities and which appear on the following list:

- Bulk Agricultural Products Dealers and Distributors
 - Mining and Quarrying
- (continued)

- Highway Deicing Material Storage
- Textile and Apparel Products
- Lumber and Wood Preserving
- Printing and Publishing
- Chemical Products
- Leather Products
- Mineral Products: Glass and Cement
- Metal Products
- Machine Shops
- Electronics and Electronic Equipment
- Transportation Maintenance
- Scrap Trade and Metal Container Recyclers
- Chemical and Petroleum Storage and Sales
- Automotive Repair, Services and Related Parking
- Personal Services: Laundry, Pest Control and Photofinishing
- Repair Services: Furniture, Welding and Septage Services
- Amusement and Recreation
- Educational, Medical and Engineering Laboratories

MANUFACTURING - Industrial establishments which produce primary products from raw materials.

NUTRIENT MANAGEMENT PLAN - A document applicable to agricultural properties which describes the storage, handling and application of fertilizers, including manure, related to agricultural production.

PERSON - An individual, association, public or private corporation for profit or not for profit, partnership, firm, trust, estate, department, board, bureau or agency of the Commonwealth, political subdivision, municipality, district authority or any other legal entity whatsoever which is recognized by law as the subject of rights and duties.

PESTICIDE MANAGEMENT PLAN - A document applicable to agricultural properties which describes the storage, handling and application of products to control pests and undesirable vegetation related to agricultural production.

POLLUTION INCIDENT PREVENTION (PIP) PLAN - An environmental emergency response document authorized by Chapter 101 of the DER Rules and Regulations which is applicable to facilities which handle materials with the potential for accidental pollution of the waters of the Commonwealth. Specific requirements for a PIP plan are contained in "Guidelines for the Development and Implementation of Environmental Emergency Response Plans," PADER, September 1990.

PREPAREDNESS, PREVENTION AND CONTINGENCY (PPC) PLAN - An environmental emergency response document required by the Federal Resource Conservation and Recovery Act

WASTE - Garbage, refuse and other discarded materials including, but not limited to, solid and liquid materials resulting from municipal, industrial, commercial, institutional, agricultural and residential activities.

WELLHEAD PROTECTION AREA 1 - Wellhead Zone (WHZ) - That area of the land surface within a calculated one week ground water time of travel of a protected public water supply well.

WELLHEAD PROTECTION AREA 2 - Zone of Influence (ZOD) - That area of the land surface which represents the cone of depression associated with a protected public water supply well.

WELLHEAD PROTECTION AREA 3 - Zone of Contribution (ZOC) - That area of the land surface which, through recharge or other means, provides water to sustain the yield of a protected public water supply well.

ARTICLE III WELLHEAD PROTECTION REQUIREMENTS

SECTION 301. GENERAL REQUIREMENTS

No land use, physical facilities or activity specified in Section 105 shall occur within Wellhead Protection Areas 1, 2 or 3 except in strict conformance with the provisions of this Ordinance.

SECTION 302. WELLHEAD PROTECTION AREAS.

- A. Mapping of Wellhead Protection Areas. In order to implement the provisions of this Wellhead Protection Ordinance, wellhead protection areas surrounding protected public water supply wells are hereby established. The boundaries of Wellhead Protection Areas 1, 2 and 3 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.

Should any person challenge the boundary of Wellhead Protection Areas 1, 2 or 3, it shall be the responsibility of that person to retain a recognized professional with competence in the field to determine more accurately the precise boundary of the disputed area. The final boundary to be used will be determined by the zoning officer with assistance from the municipal engineer and/or a professional hydrogeologist, as appropriate.

B. Prohibitions within Wellhead Protection Areas

1. Wellhead Protection Area 1 - Except as provided for in ARTICLE IV, the following land uses, physical facilities and activities are prohibited:

- (a) Facilities which generate, store, treat or dispose of hazardous material and which are required to maintain a Pollution Incident Prevention (PIP); Spill Prevention Control and Countermeasure (SPCC); Preparedness, Prevention and Contingency (PPC); Spill Prevention Response (SPR) or SARA Title III Off-Site Plan;
- (b) Bulk agricultural products dealers and distributors
- (c) Large volume subsurface sewage disposal systems
- (d) Large volume spray irrigation sewage disposal systems
- (e) Underground injection wells
- (f) Aboveground storage tanks
- (g) Underground storage tanks
- (h) Waste disposal facilities
- (i) Land application of sewage sludge
- (j) Stormwater retention facilities
- (k) Unlined stormwater detention facilities
- (l) Operations and/or facilities which are involved with the manufacture, storage or processing of materials and which fall within the following categories:
 - Bulk Agricultural Products Dealers and Distributors
 - Mining and Quarrying
 - Highway Deicing Material Storage
 - Textile and Apparel Products
 - Lumber and Wood Preserving
 - Printing and Publishing
 - Chemical Products
 - Leather Products
 - Mineral Products: Glass and Cement

- Metal Products
- Machine Shops
- Electronics and Electronic Equipment
- Transportation Maintenance
- Scrap Trade and Metal Container Recyclers
- Chemical and Petroleum Storage and Sales
- Automotive Repair, Services and Related Parking
- Personal Services: Laundry, Pest Control and Photofinishing
- Repair Services: Furniture, Welding and Septage Services
- Amusement and Recreation
- Educational, Medical and Engineering Laboratories

2. Wellhead Protection Area 2 - Except as provided for in ARTICLE IV, the following land uses, physical facilities and activities are prohibited:

- (a) Facilities which generate, store, treat or dispose of hazardous material which are required to maintain a Pollution Incident Prevention (PIP); Spill Prevention Control and Countermeasure (SPCC); Preparedness, Prevention and Contingency (PPC); Spill Prevention Response (SPR) or SARA Title III Off-Site Plan;
- (b) Bulk agricultural products dealers and distributors
- (c) Large volume subsurface sewage disposal systems
- (d) Large volume spray irrigation sewage disposal systems
- (e) Underground injection wells
- (f) Aboveground storage tanks
- (g) Underground storage tanks
- (h) Waste disposal facilities
- (i) Land application of sewage sludge
- (j) Stormwater retention facilities
- (k) Unlined stormwater detention facilities

3. Wellhead Protection Area 3 - Except as provided for in ARTICLE IV, the following land uses, physical facilities and activities are prohibited:
 - (a) Facilities which dispose of hazardous material through land surface or subsurface means including, but not limited to, Class IV injection wells and waste disposal facilities.

ARTICLE IV GENERAL REGULATIONS

SECTION 401. CONTINUATION OF EXISTING LAND USES, PHYSICAL FACILITIES AND ACTIVITIES

Any land use, physical facility or activity prohibited within ARTICLE III lawfully in existence within Wellhead Protection Areas 1, 2 or 3 prior to the effective date of this Ordinance may continue to exist on the parcel upon which it is located subject to meeting existing applicable federal, state and local regulations including the requirements included within ARTICLE VI.

SECTION 402. EXISTING SEWAGE DISPOSAL PROBLEMS

Notwithstanding the provisions of ARTICLE III, large volume subsurface sewage disposal systems or large volume spray irrigation sewage disposal systems may be used if necessary to solve sewage disposal problems associated with existing development.

SECTION 403. PUBLIC WATER SUPPLY PROJECTS

Notwithstanding the provisions of ARTICLE III, public water supply projects which require the use of chemicals for disinfection or treatment will be allowed in all wellhead protection areas subject to their approval, construction and operation in accordance with DER regulations.

ARTICLE V SUBDIVISION AND LAND DEVELOPMENT

SECTION 501. GENERAL REQUIREMENTS

No subdivision or land development shall occur within Wellhead Protection Areas 1, 2 or 3 except in strict conformance with the provisions of this Ordinance.


SECTION 502. WELLHEAD PROTECTION AREAS MAPPING

In order to implement the provisions of this Wellhead Protection Ordinance, wellhead protection areas surrounding protected public water supply wells are hereby established. The boundaries of Wellhead Protection Areas 1, 2 and 3 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.

Should any person challenge the boundary of Wellhead Protection Areas 1, 2 or 3, it shall be the responsibility of that person to retain a recognized professional with competence in the field to determine more accurately the precise boundary of the disputed area. The final boundary to be used will be determined by the municipality with assistance from the municipal engineer and/or a professional hydrogeologist, as appropriate.

SECTION 503. WELLHEAD PROTECTION AREA RESTRICTIONS

- A. Subdivisions and land developments within Wellhead Protection Areas 1, 2 or 3 for which stormwater management controls are required pursuant to the municipal subdivision and land development ordinance shall be designed consistent with the following:
 - 1. Stormwater retention basins shall be prohibited;
 - 2. Stormwater detention basins shall be designed with an impermeable liner to prohibit the infiltration of impounded water to the subsurface.
- B. Subdivisions and land developments within Wellhead Protection Areas 1, 2 or 3 which are proposed for subsurface sewage disposal shall provide a tested and suitable primary absorption area and a tested and suitable secondary absorption area on each lot.
- C. Subdivisions and land developments within both Wellhead Protection Areas and carbonate bedrock areas as mapped in Appendix A shall have the following Preliminary Plan requirements in addition to those requirements of the municipal subdivision and land development ordinance:
 - 1. A recognized professional with competence in the field shall review aerial photographs, soils, geologic and other available related data as the data relates to the subject property. The professional shall also conduct a site inspection of the property.
 - 2. Based on the work required in Section 503.C.1., the professional shall prepare a map of the site showing all karst features or feature indicators. The mapping shall indicate, but shall not be limited to, the following:

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- (a) Closed depressions
 - (b) Open sinkholes
 - (c) Seasonal high water table indicators
 - (d) Outcrops of bedrock
 - (e) Unplowed areas in plowed fields
 - (f) Surface drainage into ground
 - (g) "Ghost lakes" after rainfall
 - (h) Lineaments and faults
 - (i) Limonite excavations and quarries
 - (j) Geologic contacts
3. Based upon the work performed in Sections 503.C.1. and 503.C.2., the professional shall determine what further testing should be done by the applicant to ensure compliance with the performance standards set forth in Section 503.D.. Testing methodology shall be reasonable under the circumstances, including (1) the scale of the proposed development, and (2) the hazards revealed by examination of available data and site inspection.
 4. The applicant shall cause the additional testing established in Section 503.C.3. to be done. A study report shall be submitted and referred to the municipal engineer. This study shall include a map of the area, all test results and a recommendation on the mitigating measures to be taken to meet the standards of Section 503.D..
 5. The municipal engineer shall report to the planning commission, with a copy to the landowner, his or her opinion as to the adequacy of the study and as to the capability of the site to support the proposed development in a manner in which the risks attendant to the development in carbonate areas are either eliminated or minimized. Recommendations for site development including storm water management, the layout of utility lines, grading and building location may be included. Additional studies or testing as deemed necessary by the municipal engineer in order to produce an adequate study given the scale of the proposed development and the hazards revealed may be required of the applicant.

- D. Subdivision and land developments within both Wellhead Protection Areas and carbonate bedrock areas as mapped in Appendix A shall have the following design requirements:
1. All buildings, structures, impervious surfaces and utilities shall be so situated, designed and constructed as to minimize the risk of new sinkhole formation and of the accelerated introduction of contaminants and pollution into the wellhead protection area through existing or future sinkholes.
 2. Buildings, structures, impervious surfaces and utilities shall not be located within one hundred (100) feet of the karst features identified pursuant to Section 503.C. unless (1) a recognized professional with competence in the field demonstrates that a minimal risk of sinkhole formation or enlargement will exist, or (2) mitigating measures are taken to minimize the risk of sinkhole formation or enlargement. These mitigating measures shall be designed by a recognized professional with competence in the field.
 3. Stormwater management facilities, including but not limited to, detention basins, shall not be located within one hundred (100) feet of the karst features identified pursuant to Section 503.C. unless (1) a recognized professional with competence in the field demonstrates that a minimal risk of sinkhole formation or enlargement will exist, or (2) mitigating measures are taken to minimize the risk of sinkhole formation or enlargement. These mitigating measures shall be designed by a recognized professional with competence in the field.
 4. Regrading shall not alter drainage patterns unless (1) a recognized professional with competence in the field demonstrates that a minimal risk of sinkhole formation or enlargement will exist, or (2) mitigating measures are taken to minimize the risk of sinkhole formation or enlargement. These mitigating measures shall be designed by a recognized professional with competence in the field.
 5. Stormwater shall not be redirected into a sinkhole.

**ARTICLE VI
SPECIAL WELLHEAD PROTECTION PROVISIONS**

SECTION 601. GENERAL REQUIREMENTS

No land use, physical facility or activity specified in Section 105 shall occur within Wellhead Protection Areas 1, 2 or 3 except in strict conformance with the requirements of this ARTICLE.

SECTION 602. WELLHEAD PROTECTION AREA REQUIREMENTS

The following land uses, physical facilities and activities, located within Wellhead Protection Areas 1, 2 or 3, which are specifically allowed in ARTICLE III or ARTICLE IV of this Ordinance, shall meet the following conditions:

<u>Land Use, Physical Facility or Activity</u>	<u>Conditions</u>
1. Facilities which generate, store, treat or dispose of hazardous material which are required to maintain a Pollution Incident Prevention (PIP); Spill Prevention Control and Countermeasure (SPCC); Preparedness, Prevention and Contingency (PPC); Spill Prevention Response (SPR); or SARA Title III Off-Site Plan.	(a) A current PIP, SPCC, PPC, SPR or SARA Title III Off-Site Plan must be filed with the municipality. (b) A current Hazardous Substance Survey Form, Environmental Hazard Survey Form and SARA Title III Tier I and Tier II Report must be filed with the municipality.
2. Bulk Agricultural products dealers and distributors.	(a) At minimum, a current plan meeting the requirements of a PIP plan must be filed with the municipality. (b) A current Hazardous Substance Survey Form, Environmental Hazard Survey Form and SARA Title III Tier I and Tier II report must be filed with the municipality.
3. Large Volume Subsurface Sewage Disposal Systems and Large Volume Spray Irrigation Sewage Disposal Systems	(a) A current permit from the Department of Environmental Resources must be filed with the municipality.

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Land Use, Physical Facility or Activity

Conditions

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| 3. Large Volume Subsurface Sewage Disposal Systems and Large Volume Spray Irrigation Sewage Disposal Systems (cont'd) | (b) DER required water quality monitoring reports must be filed with the municipality. |
| 4. Underground Injection Wells (Classes I, II, III and V) | (a) A current registration from the Environmental Protection Agency must be filed with the municipality. |
| 5. Aboveground storage tanks and underground storage tanks | (a) A current registration from the Department of Environmental Resources must be filed with the municipality. |
| 6. Waste Disposal Facilities | (a) A current permit from the Department of Environmental Resources must be filed with the municipality.

(b) A current PPC plan, if required for the the facility by DER regulations, must be filed with the municipality.

(c) DER required water quality monitoring reports must be filed with the municipality.

(d) DER required water pollution abatement plans must be filed with the municipality. |
| 7. Sewage Sludge Land Application | (a) A current permit from the Department of Environmental Resources must be filed with the municipality.

(b) Sewage sludge tests associated with the permit application must be filed with the municipality.

(c) DER required water quality monitoring reports must be filed with the municipality. |

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Land Use, Physical Facility or Activity

Conditions

8. Agricultural Operations

- (a) The Conservation Plan prepared according to Chapter 102 of DER regulations must include a Pesticide Management Plan and a Nutrient Management Plan.
- (b) Within areas of carbonate bedrock as delineated in Appendix A, the Conservation Plan prepared according to Chapter 102 of DER Regulations must include the identification of sinkholes and a mitigation plan.

9. Sewage Disposal Facilities

- (a) Sewage disposal facilities must be operated and maintained to prevent discharge of untreated or partially treated sewage to surface or ground waters.
- (b) On-lot sewage disposal systems must be inspected by the Sewage Enforcement Officer (SEO) and any necessary repairs or maintenance must be performed prior to the expansion or conversion of the land use served.
- (c) On-lot sewage disposal systems must be inspected by the Sewage Enforcement Officer and any necessary repairs or maintenance must be performed prior to transfer of property ownership.

**ARTICLE VII
INSPECTIONS**

SECTION 701. MUNICIPAL INSPECTIONS

The municipal engineer or his designee shall be authorized to inspect the following facilities located within Wellhead Protection Areas 1, 2 or 3 for purposes of determining compliance with

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this Ordinance and any federal or state permit or regulation requirements upon direction by the governing body:

- A. Facilities with PIP, SPCC, PPC, SPR or SARA Title III Off-Site Plans
- B. Bulk agricultural products dealers and distributors
- C. Large volume subsurface sewage disposal systems
- D. Large volume spray irrigation sewage disposal systems
- E. Underground and aboveground storage tanks
- F. Underground injection wells
- G. Waste disposal facilities
- H. Sewage sludge land application sites
- I. Other industrial and commercial facilities

The schedule of inspections shall be determined by the municipality for each type of facility. Inspectors shall be responsible for reporting any violations to the municipality. The municipality shall inform DER or EPA, as appropriate, of any possible violations of their regulations for the purpose of follow-up actions by those agencies.

SECTION 702. INSPECTIONS BY THE COUNTY CONSERVATION DISTRICT

The county conservation district shall be authorized to perform monthly inspection of the following activities located within Wellhead Protection Areas 1, 2 or 3:

- A. Agricultural operations covered by a Conservation Plan under Chapter 102 of DER regulations
- B. Earthmoving activities covered by an Erosion and Sedimentation Plan under Chapter 102 of DER regulations

SECTION 703. RIGHT-OF-ENTRY

Upon presentation of the proper credentials, duly authorized representatives of the municipality may enter at reasonable times upon any property within a Wellhead Protection Area to investigate or ascertain whether the requirements of this Ordinance are being met.

ARTICLE VIII
WELLHEAD PROTECTION AREA MAP

SECTION 801. OFFICIAL MAP

The attached map depicting Wellhead Protection Areas 1, 2 and 3 and the carbonate bedrock areas is declared to be a part of this Ordinance as Appendix A.

APPENDIX A

WELLHEAD PROTECTION AREA AND
CARBONATE BEDROCK AREA MAP

(To Be Inserted at Time of
Municipal Ordinance Adoption)

APPENDIX H

DRAFT WELLHEAD PROTECTION ZONE

Section 209 - Wellhead Protection Zone (WP)

Section 209.1 - Purpose and Intent

- A. The purpose of the wellhead protection zone (WP) is to assure acceptable quality and quantity of groundwater resources for the present and future public health, safety, and welfare through a policy of planned and managed water resource development which includes protection, preservation, and enhancement.
- B. The groundwater underlying the village of Bainbridge well field is the major source of existing and future water supply, including drinking water, for Bainbridge. Accidental spills and discharges of toxic and hazardous materials, and mismanagement of nutrients within the wellhead area, may threaten the quality of the groundwater supplies and related water resources in Bainbridge, thus posing potential public health and safety hazards.
- C. Unless preventative measures are adopted to control the discharge and storage of toxic and hazardous materials within the wellhead protection area, spills and discharges of such materials will predictably occur, and with greater frequency and degree of hazard by reason of anticipated increasing construction, commercial, and residential development within the zone.

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Section 209.2 - Lands in Zone Defined

- A. These regulations shall apply to all land uses encompassed within the wellhead protection area, designated as the zone of contribution on Plate 1 of the R. E. Wright Associates, Inc. (REWAI) report dated 1992 entitled "Bainbridge Wellhead Protection Program." This report is held by the Township zoning officer.
- B. This zone is further subdivided into two subareas. Area 1 is designated as the zone of contribution. This zone encompasses that area bounded on the outer perimeter by the line as shown on Plate 1 of the REWAI 1991 report. The second subarea is designated as the immediate response area. This area encompasses the area outlined by the line indicating the extent of the immediate response area on Plate 1 of the REWAI 1992 report.

Section 209.3 - Boundary Disputes

- A. Should a dispute concerning any boundary of the wellhead protection zone or the immediate response area subzone arise, the initial determination of the Zoning and Hearing Board may be appealed. The burden of proof in such an appeal shall be on the property owner, and all hearings and procedures shall follow the requirements of Section 603 of this ordinance.
- B. Redefinition of the zone of contribution or immediate response areas shall be supported by detailed hydrogeologic information collected by the applicant

r.e. wright associates, inc.

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using methods considered to be standard within the industry.

Section 209.4 - Relationship to Other Sections

- A. The provisions of this section create an overlay zoning district, which is applicable within the wellhead protection area established by this Zoning Ordinance. To the extent the provisions of this section are applicable and more restrictive, they shall supersede conflicting provisions within all other sections of this Zoning Ordinance and all other ordinances in Conoy Township. However, all other provisions of all other articles of this Zoning Ordinance and all other ordinances of Conoy Township shall remain in full force within this overlay zone.

Section 209.5 - Use Regulations for Wellhead Protection Area - Zone of Contribution (WPC)

- A. Permitted Uses - All uses which are permitted under the existing zoning regulations are permitted in the zone of contribution unless otherwise identified in Subsection B or Section 209.6 below.
- B. Design and Performance Standards
1. Nutrients contained in manure, fertilizer, municipal, or industrial waste products, or in any other form, shall not be stored or applied to the land in any manner or in an amount which will result in concentrations exceeding 10 milligrams per liter (mg/l) nitrate-nitrogen in groundwater at the

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downgradient property line, as demonstrated in a current nutrient management plan for the farm.

2. Where manure or sludge holding ponds or lagoons are proposed, adequate subsurface information shall be acquired using an approved method, evaluated, and provided to the Township in order to determine the stability of the soils and geologic materials beneath the proposed facility, and their potential for leakage of nutrients. Where apparent natural soil permeabilities are greater than that of clay (10^{-6} centimeters per second [cm/sec] or 1.4×10^{-3} inches per hour [in/hr]) for the 2-foot interval below the depth of the proposed facility, a stable, low permeability liner shall be installed as follows:
 - a. One foot of clay of permeability less than 10^{-7} cm/sec; or
 - b. Two feet of clay of permeability less than 10^{-6} cm/sec; or
 - c. Two feet of compacted soil of permeability less than 10^{-5} cm/sec with a 30-mil thick artificial liner of permeability less than 10^{-7} cm/sec; or
 - d. A very low permeability base (less than 10^{-7} cm/sec) constructed of asphalt, steel, or concrete.

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3. Manure, sewage sludge, or nutrients shall be applied only in areas where natural soils or fill material of comparable texture exist and bedrock is greater than two feet below ground surface (bgs), unless it is otherwise demonstrated to the Township's satisfaction that the application of the nutrients does not represent a potential for groundwater degradation.
4. No material containing any potential groundwater contaminant or controlled hazardous substance not associated with water supply and wastewater disposal functions shall be introduced into any septic system within the zone of contribution for the purpose of septic system maintenance or renovation, or down-drain disposal of the material.
5. Prior to any new groundwater withdrawals, the proposed extractions shall be evaluated by the developer and reviewed by the Township to ensure that the additional withdrawal will not adversely effect the long-term yield of the present municipal well field. Total groundwater withdrawals from the wellhead protection area shall not exceed 75 percent of available groundwater recharge as determined for a 1-in-10-year drought period, unless alternate sources from other aquifer areas or supplies are secured. The groundwater available shall be compared to the projected total water demand by an approved method, and supporting documentation shall be submitted to the Township. The demand from the Bainbridge well field will be the projected demand

in the year 2010, as determined in the REWAI 1990 report.

6. The groundwater recharge rate after land use alterations to a site within the zone of contribution must equal or exceed the predevelopment groundwater recharge rate. Unless greater than 90 percent of a site is provided with vegetated, permeable surface into which all runoff is dispersed, the following criteria shall be met:
 - a. Calculations for predevelopment storm runoff will be based on assumed natural conditions for the site in Conoy Township. These runoff estimates will incorporate a minimum of 25 percent woodland or the predevelopment wooded area, whichever is greater, with the balance of the site in natural meadow.
 - b. All pre- and post-development runoff estimates shall take into account, as a minimum, land slope, land cover, soil characteristics, and the two-year storm event.
 - c. The difference in runoff volume between pre- and post-development land uses shall be infiltrated.
7. There shall be no significant alterations to long-term aquifer storage capacity within the zone of contribution by land use modification(s). In order to maintain aquifer storage, groundwater recharge must be evenly distributed throughout the site, particularly in topographically high areas.

Groundwater storage shall be preserved by one, or a combination, of the following methods:

- a. Providing greater than 90 percent vegetated, permeable surface area over the site and utilizing open-section roads.
 - b. Providing greater than 50 percent permeable surface area over the site, infiltrating rooftop drainage from individual buildings, and utilizing open-section roads.
8. If a groundwater recharge basin or facility is necessary to maintain predevelopment recharge rates, then the quality of water recharging the aquifer beneath the zone of contribution shall not be degraded to violate United States Environmental Protection Agency (EPA) drinking water criteria. The following requirements shall also apply:
- a. To monitor possible groundwater degradation in and downgradient from recharge areas, which may result from land use alterations, a downgradient monitoring point to monitor groundwater quality shall be provided.
 - b. The monitoring point shall be located within 100 feet of any recharge area or facility on the site in a direct downgradient flow path direction, and be designated on the site plan.

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- c. The monitoring point shall consist of any accessible point at which the shallow water table may be sampled, such as shallow monitoring wells, springs or seeps, or domestic wells with less than 40 feet of casing.
 - d. An initial background water quality groundwater sampling will be conducted by the developer/owner for each monitoring point and analyzed for total dissolved solids, chromium, cadmium, lead, zinc, nitrate-nitrogen, chloride, hydrocarbon compounds, pesticides, and volatile organic compounds (VOCs).
 - e. Any necessary monitoring schedule and parameters to be analyzed will be determined by the Township, and will be based on background quality and site-specific conditions.
9. A soils investigation shall precede design and construction of any recharge/infiltration facility or area in accordance with an approved method.
10. All recharge/infiltration facilities or areas must be constructed in accordance with the following standards:
- a. All flows up to and including the two-year storm event must be infiltrated within a two-day time period.

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- b. No single recharge/infiltration facility or area may receive runoff from an area of more than 10 acres in size.
- c. The bottom of the facility shall be a minimum of four feet above the seasonally high water table or perched water level.
- d. Beneath each facility, there shall be a minimum of four feet of soil or suitable renovative material above bedrock.
- e. The least permeable soils beneath recharge/infiltration areas shall have a minimum vertical infiltration rate of 0.5 in/hr, and no underlying soils may have vertical infiltration rates greater than 8.5 in/hr, as tested using a falling head hydraulic conductivity test, or as estimated from soil textural analysis.
- f. Facilities may not be located where there is evidence of subsurface voids or sinkholes.
- g. A minimum vegetated buffer of 25 feet from the edge of a facility (top of the berm of a basin) to the nearest adjacent lot shall be reserved. A landscaping plan shall be prepared for the buffer (and basin) that emphasizes the use of low maintenance, water tolerant, pollutant filtering, nutrient uptaking, native plant species that provide food and cover for

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- wildlife, and when necessary, can act as a screen.
- h. The change in standing water depth above the base of the facility over time shall be checked after each one-half-inch storm in the first year after construction to monitor exfiltration rates. A calibrated staff gauge shall be installed within the facility to determine the exfiltration rates. Similar tests shall be conducted annually thereafter to gauge the degree of surface clogging that may occur with time.
 - i. Runoff shall be treated or filtered prior to entrance to a recharge/infiltration facility such that total suspended solids (sediment) concentrations are reduced to a minimum. Further, infiltration basins shall be fully vegetated and stable prior to use.
 - j. All other construction design criteria shall conform to applicable state and county Standards and Specifications for Storm Water Management Practices.
11. Where the above standards (209.5.B.10) cannot be met due to limiting site conditions, plans for reductions in impervious surface, clustering development, on slopes or on least permeable soil areas, or other modifications, coupled with standard storm water

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management, shall be submitted to the Township to be reviewed and approved only on a case-by-case basis.

12. All other erosion and sedimentation control and storm water management measures shall be in strict accordance with applicable state and county regulations.
13. No chemical shall be stored, used, or applied such that it may cause pollution of surface water or groundwater such that the concentrations in the groundwater or surface water exceed the concentration criteria promulgated under federal drinking water regulations.
14. Where chemical storage lagoons or ponds are proposed, adequate subsurface information shall be acquired using an approved method, evaluated, and provided to the Township in order to determine the stability of the soils and geologic materials beneath the proposed facility, and their potential for leakage of chemical substances. Such facilities shall be constructed to prevent any migration of wastes from the facility to adjacent subsurface soil or groundwater or surface water at any time, in accordance with Pennsylvania and federal regulations (see 40 CFR 264.220 - 264.231 and 40 CFR 265.220 - 265.230).
15. For any nonresidential facility within the zone of contribution using or storing in excess of 500 pounds of dry and/or 30 gallons of liquid

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chemical substance on-site, the applicant shall provide the following information:

- a. The location, type, quantity, and methods of disposal of those substances being stored, handled, and/or processed.
 - b. A contingency spill remediation plan.
16. Owners or operators of facilities within the zone of contribution using or storing in excess of 500 pounds dry and/or 30 gallons of liquid chemicals shall provide annual updates concerning any changes in the location, type, quantity, and methods of disposal of chemicals being stored, handled, or processed.
 17. All dry chemicals shall be protected, stored, and contained in a manner which prevents the loss of any chemical from the storage area via leaching into the underlying soil, or by storm water or surface water runoff.
 18. Herbicides, insecticides, rodenticides, fungicides, nematocides, and other biocides shall be handled as follows:
 - a. Only persons certified as private applicators under current Pennsylvania law may apply chemical control compounds for any property larger than five acres which is to be treated within the zone of contribution.

- b. All chemicals shall be stored, handled, applied, and disposed of in strict accordance with label recommendations.
 - c. There shall be no use of organochlorine-based insecticides.
 - d. An integrated pest management program shall be developed and implemented by the party responsible for any property larger than five acres which is to be treated for pest control within the zone of contribution.
 - e. All nematocides shall be applied only according to the recommendations of a County Agricultural Extension Service.
19. Road salt and deicing compounds shall be handled as follows:
- a. Application of road salts shall be limited to only road intersections, road curvatures, and those sections of roadways with slopes greater than six percent.
 - b. Impervious liners and all-weather coverings shall be utilized at all road deicing salt storage facilities within the zone of contribution to prevent the transport of salt to surface water or groundwater.

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20. The installation within the zone of contribution of underground storage tanks (USTs) with a capacity greater than 250 gallons shall require that an installation, monitoring, and emergency response plan be submitted for review and approval by the Township prior to installation.

C. Prohibited Uses

1. All uses prohibited either expressly or implicitly in the underlying zoning district for the land in question are prohibited in the zone of contribution.

Section 209.6 - Use Regulations for Wellhead Protection Area - Immediate Response Area (WPI)

- A. Permitted Uses - All uses which are permitted under the existing zoning regulations are permitted in the immediate response area unless otherwise identified in Subsection C below.
- B. Design and Performance Standards - The design and performance standards within the immediate response area are the same as those required for the zone of contribution as set forth in Section 209.5.B, unless otherwise identified in Subsection C below.
- C. Prohibited Uses
 1. USTs are prohibited from within the immediate response area.

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2. There shall be no storage of road deicing salt within the immediate response area.
3. No deicing salts shall be used or applied within the immediate response area within 200 linear feet of an existing community supply well site.
4. All nonresidential storage and/or handling of controlled hazardous substances (40 CFR 261) shall be prohibited.
5. There shall be no chemical applications for insect or weed control along public rights-of-way within the immediate response area, except for spot-spraying of nuisance weeds and for purposes of home lawn and garden maintenance.
6. No chemical shall be stored, used, or applied within the immediate response area within 200 linear feet of an existing or potential community supply well site, excluding chemicals utilized in on-site water treatment.
7. There shall be no underground storage of any chemicals, including petroleum-based hydrocarbon fuels and lubricants.
8. No sediment and erosion control or storm water management facilities shall be located within 200 linear feet from any public water supply well.

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9. The installation of new septic systems is prohibited.
10. Manure or sludge holding ponds or lagoons are prohibited.