

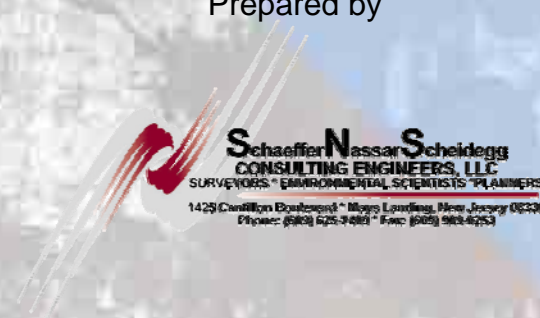


Buena Vista Township

Municipal Stormwater Management Plan

August 2008

Prepared by



Project No. 8000.69

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Introduction

This Municipal Stormwater Management Plan (MSWMP) documents the strategy for Buena Vista Township (“the Township”) to address stormwater-related impacts. This plan is prepared using the Sample Municipal Stormwater Management Plan included in Appendix C of the New Jersey Stormwater Best Management Practices Manual, dated February 2004, as a template. The creation of this plan is required by N.J.A.C. 7:14A-25 Municipal Stormwater Regulations. This plan contains all of the required elements described in N.J.A.C. 7:8 Stormwater Management Rules. The plan addresses groundwater recharge, stormwater quantity, and stormwater quality impacts by incorporating stormwater design and performance standards for new major development, defined as projects that disturb one or more acre of land. These standards are intended to minimize the adverse impact of stormwater runoff on water quality and water quantity and the loss of groundwater recharge that provides baseflow in receiving water bodies. The plan describes long-term operation and maintenance measures for existing and future stormwater facilities.

A “build-out” analysis has been included in this plan based upon existing zoning and land available for development. The plan also addresses the review and update of existing ordinances, the Township Master Plan, and other planning documents to allow for project designs that include low impact development techniques. The final component of this plan is a mitigation strategy for when a variance or exemption of the design and performance standards is sought. As part of the mitigation section of the stormwater plan, specific stormwater management measures are identified to lessen the impact of existing development.

Goals

The goals of this MSWMP are to:

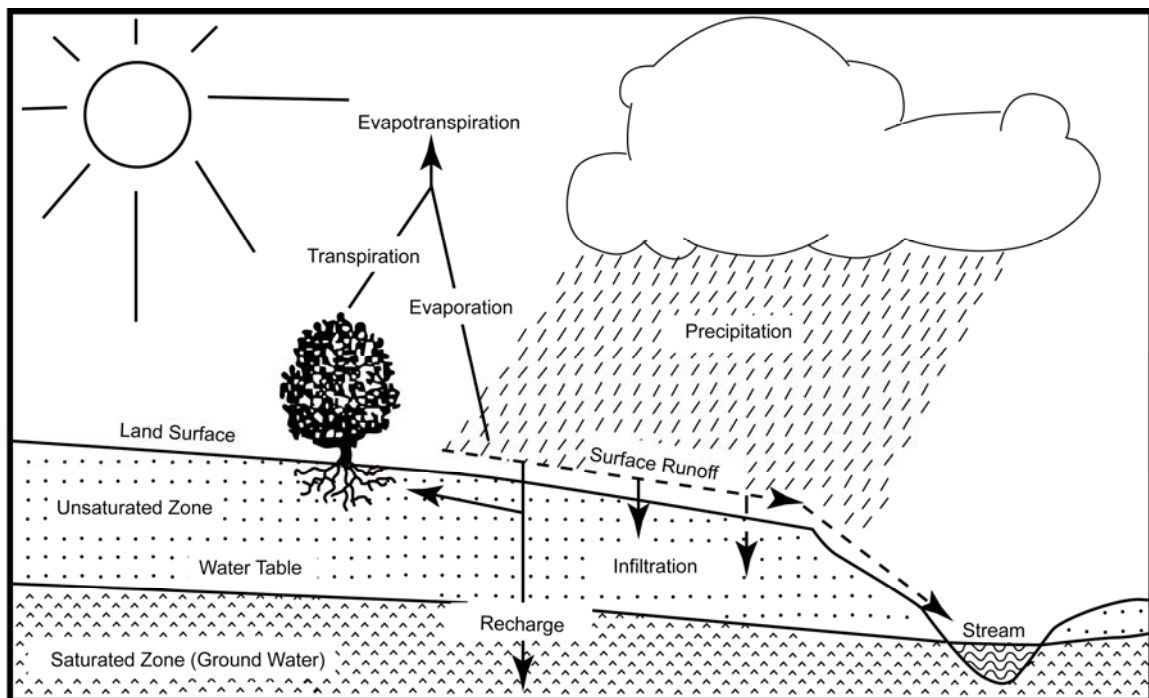
- reduce flood damage, including damage to life and property;
- minimize, to the extent practical, any increase in stormwater runoff from any new development;
- reduce soil erosion from any development or construction project;
- assure the adequacy of existing and proposed culverts and bridges, and other in-stream structures;
- maintain groundwater recharge;
- prevent, to the greatest extent feasible, an increase in nonpoint pollution;
- maintain the integrity of stream channels for their biological functions, as well as for drainage;
- minimize pollutants in stormwater runoff from new and existing development to restore, enhance, and maintain the chemical, physical, and biological integrity of the waters of the state, to protect public health, to safeguard fish and aquatic life and scenic and ecological values, and to enhance the domestic, municipal, recreational, industrial, and other uses of water; and
- protect public safety through the proper design and operation of stormwater basins.

To achieve these goals, this plan outlines specific stormwater design and performance standards for new development. Additionally, the plan proposes stormwater management controls to address impacts from existing development. Preventative and corrective maintenance strategies are included in the plan to ensure long-term effectiveness of stormwater management facilities. The plan also outlines safety standards for stormwater infrastructure to be implemented to protect public safety.

Stormwater Discussion

Land development can dramatically alter the hydrologic cycle (See Figure C-1) of a site and, ultimately, an entire watershed. Prior to development, native vegetation can either directly intercept precipitation or draw that portion that has infiltrated into the ground and return it to the atmosphere through evapotranspiration. Development can remove this beneficial vegetation and replace it with lawn or impervious cover, reducing the site's evapotranspiration and infiltration rates. Clearing and grading a site can remove depressions that store rainfall. Construction activities may also compact the soil and diminish its infiltration ability, resulting in increased volumes and rates of stormwater runoff from the site. Impervious areas that are connected to each other through gutters, channels, and storm sewers can transport runoff more quickly than natural areas. This shortening of the transport or travel time quickens the rainfall-runoff response of the drainage area, causing flow in downstream waterways to peak faster and higher than natural conditions. These increases can create new and aggravate existing downstream flooding and erosion problems and increase the quantity of sediment in the channel. Filtration of runoff and removal of pollutants by surface and channel vegetation is eliminated by storm sewers that discharge runoff directly into a stream. Increases in impervious area can also decrease opportunities for infiltration which, in turn, reduces stream base flow and groundwater recharge. Reduced base flows and increased peak flows produce greater fluctuations between normal and storm flow rates, which can increase channel erosion. Reduced base flows can also negatively impact the hydrology of adjacent wetlands and the health of biological communities that depend on base flows. Finally, erosion and sedimentation can destroy habitat from which some species cannot adapt.

Figure C-1: Groundwater Recharge in the Hydrologic Cycle



Source: New Jersey Geological Survey Report GSR-32.

In addition to increases in runoff peaks, volumes, and loss of groundwater recharge, land development often results in the accumulation of pollutants on the land surface that runoff can mobilize and transport to streams. New impervious surfaces and cleared areas created by development can accumulate a variety of pollutants from the atmosphere, fertilizers, animal wastes, and leakage and wear from vehicles. Pollutants can include metals, suspended solids, hydrocarbons, pathogens, and nutrients.

In addition to increased pollutant loading, land development can adversely affect water quality and stream biota in more subtle ways. For example, stormwater falling on impervious surfaces or stored in detention or retention basins can become heated and raise the temperature of the downstream waterway, adversely affecting cold water fish species such as trout. Development can remove trees along stream banks that normally provide shading, stabilization, and leaf litter that falls into streams and becomes food for the aquatic community.

Background

Buena Vista Township encompasses 42 square mile area and is located in the lower western portion of Atlantic County, bordering Gloucester and Cumberland counties in New Jersey. Most of the Township (90%) is located within the New Jersey Pinelands Management Area. Figure C-2 shows the area of the Township that is within Pinelands. The population of the Township has decreased slightly from 7,655 in 1990, to 7,436 in 2000. Figure C-3 illustrates the waterways in the Township. Figure C-4 depicts the Township boundary on the USGS quadrangle maps.

Buena Vista Township is a municipality of a primarily rural type nature. The development within the municipality is limited by existing zoning and Pinelands Commission Regulations. Substantial growth in Buena Vista Township is not expected. There are, however, limited areas within the municipality for residential and some modest commercial development. Intense development in Buena Vista is not foreseeable due to the existing zoning and lack of community wastewater and community potable water supplies. The existing zoning within the Pinelands and non-Pinelands portion of the Township is shown on Figure C-9. Additionally, as shown on Figure C-10, "Buena Vista Township Wetlands and Water Bodies – Constrained Land", it is evident that vast portions of Buena Vista Township are impacted by wetlands and associated wetlands buffers as mandated by the New Jersey Pinelands Commission and the New Jersey Department of Environmental Protection.

In addition to the constraints on development within most of the Township as regulated by the Pinelands, development within the Township is further constrained by the lack of wastewater treatment. Buena Vista Township has a few parcels which are included in the State Water Quality Management Plan (WQMP). Sanitary sewerage service to these parcels is further constrained by the lack of capacity in the Buena Borough MUA Sanitary Sewer Treatment Plant. The municipality does not have any public wastewater treatment facilities within their borders.

As a result of the aforementioned issues, the rate of development in Buena Vista Township is extremely slow and the projected build out development in the Township is not as great as might otherwise be expected given its geographic location, size and amount of undeveloped land within its municipal boundaries.

The New Jersey Department of Environmental Protection (NJDEP) has established an Ambient Biomonitoring Network (AMNET) to document the health of the state's waterways. There are over 800 AMNET sites throughout the state of New Jersey. These sites are sampled for benthic

macroinvertebrates by NJDEP on a five-year cycle. Streams are classified as non-impaired, moderately impaired, or severely impaired based on the AMNET data. The data is used to generate a New Jersey Impairment Score (NJIS), which is based on a number of biometrics related to benthic macroinvertebrate community dynamics.

Buena Vista Township serves as the headwaters for several river bodies. The Tuckahoe River and the South River both originate within Buena Vista Township. Additionally, portions of Deep Run, Indian Branch, Marsh Lake Branch and Three Pond Brook are contained within Buena Vista Township.

A TMDL is the amount of a pollutant that can be accepted by a waterbody without causing an exceedance of water quality standards or interfering with the ability to use a waterbody for one or more of its designated uses. The allowable load is allocated to the various sources of the pollutant, such as stormwater and wastewater discharges, which require an NJPDES permit to discharge, and nonpoint source, which includes stormwater runoff from agricultural areas and residential areas, along with a margin of safety. Provisions may also be made for future sources in the form of reserve capacity. An implementation plan is developed to identify how the various sources will be reduced to the designated allocations. Implementation strategies may include improved stormwater treatment plants, adoption of ordinances, reforestation of stream corridors, retrofitting stormwater systems, and other BMPs.

The New Jersey Integrated Water Quality Monitoring and Assessment Report (305(b) and 303(d)) (Integrated List) is required by the federal Clean Water Act to be prepared biennially and is a valuable source of water quality information. This combined report presents the extent to which New Jersey waters are attaining water quality standards, and identifies waters that are impaired. Sublist 5 of the Integrated List constitutes the list of waters impaired or threatened by pollutants, for which one or more TMDLs are needed.

According to the draft New Jersey 2008 303(d) List of Impaired Waters with priority ranking, dated August 2008, the Tuckahoe River, Collings Lakes tributaries and South River within Buena Vista are listed with a low priority for pH levels. The Federal Clean Water Act mandates that states submit to the USEPA the reference 303(d) List. New Jersey has prioritized this 303(d) List for total maximum daily load (TMDL) analysis and has prioritized these waterbodies. The state must establish TMDLs for high priority waterbodies in the next several years. Since Buena Vista Township's waterbodies are not within the high priority category, TMDL limits are not required to be established.

Figure C-2

Buena Vista Township Pinelands Management Area Boundary

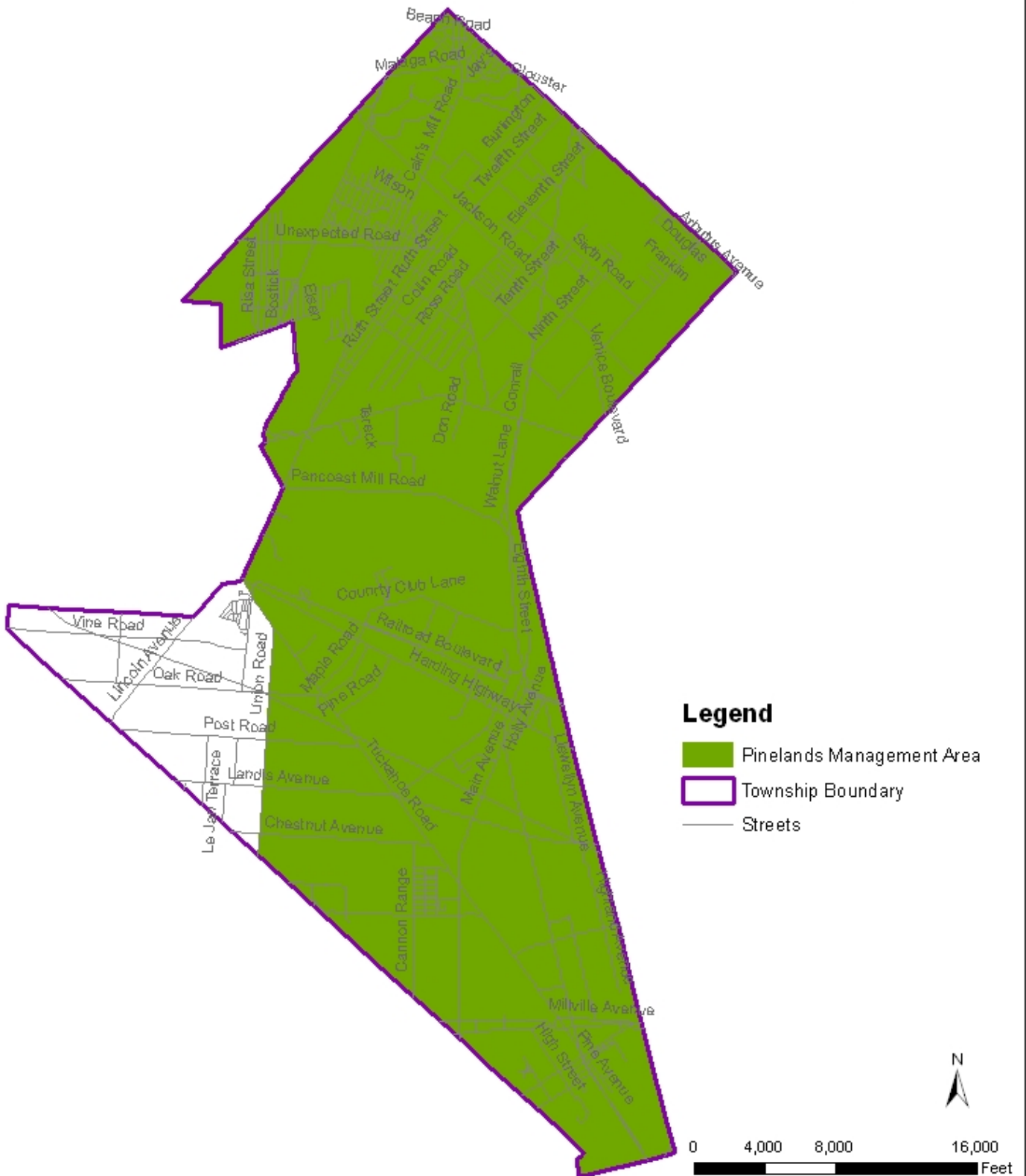
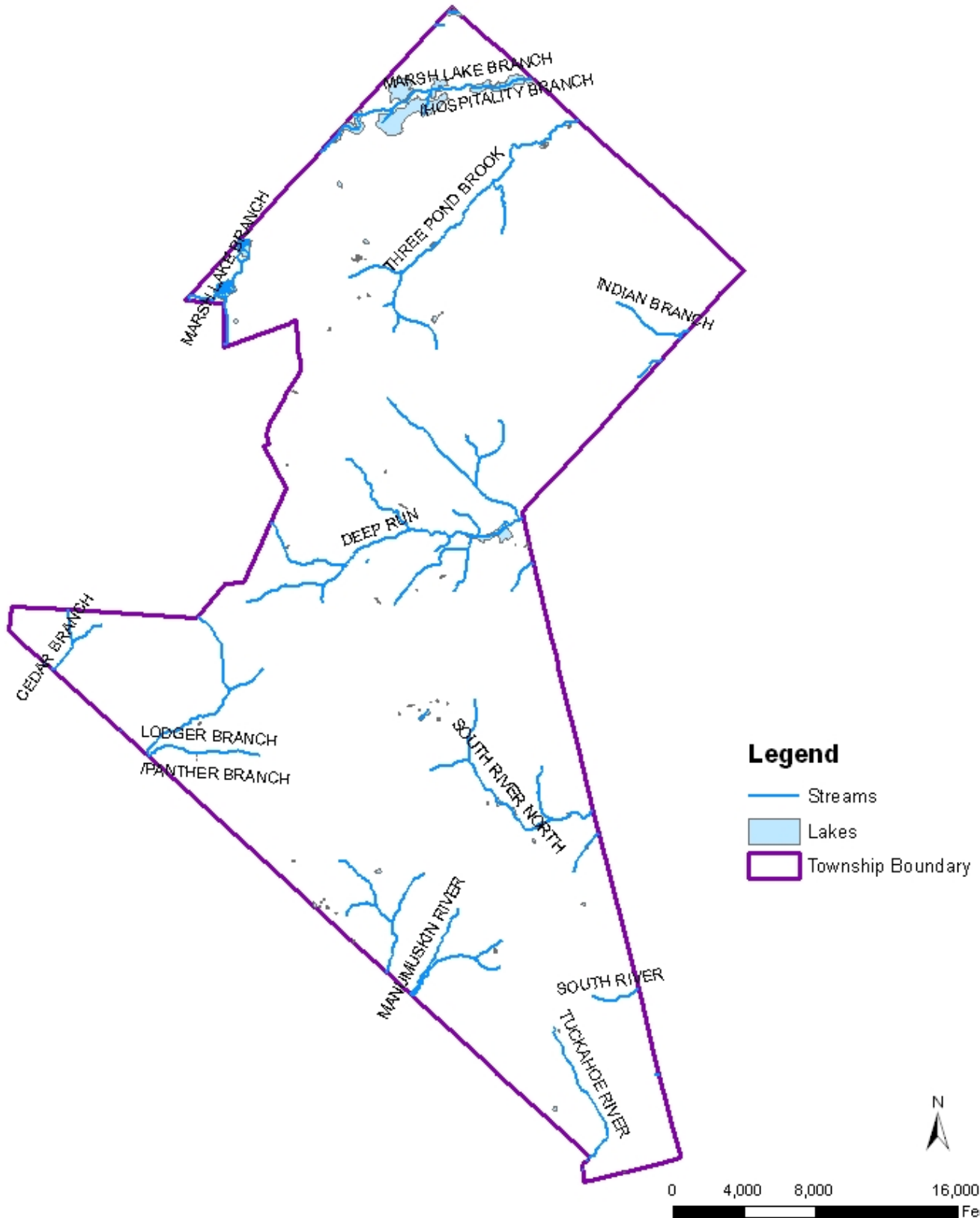


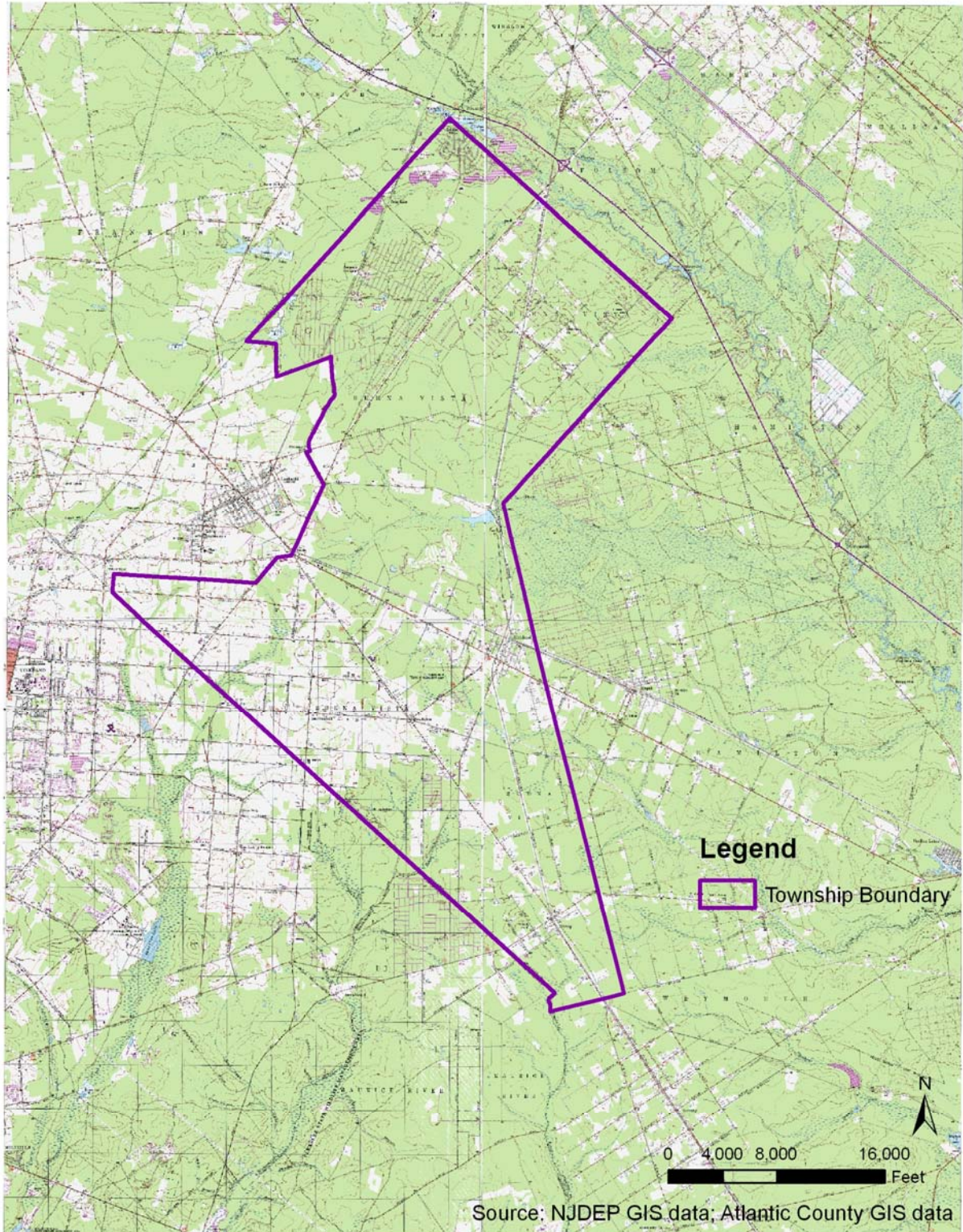
Figure C-3

Buena Vista Township Waterways



Source: NJDEP GIS data; Atlantic County GIS data

Figure C-4 Buena Vista Township Boundary on USGS Quadrangles

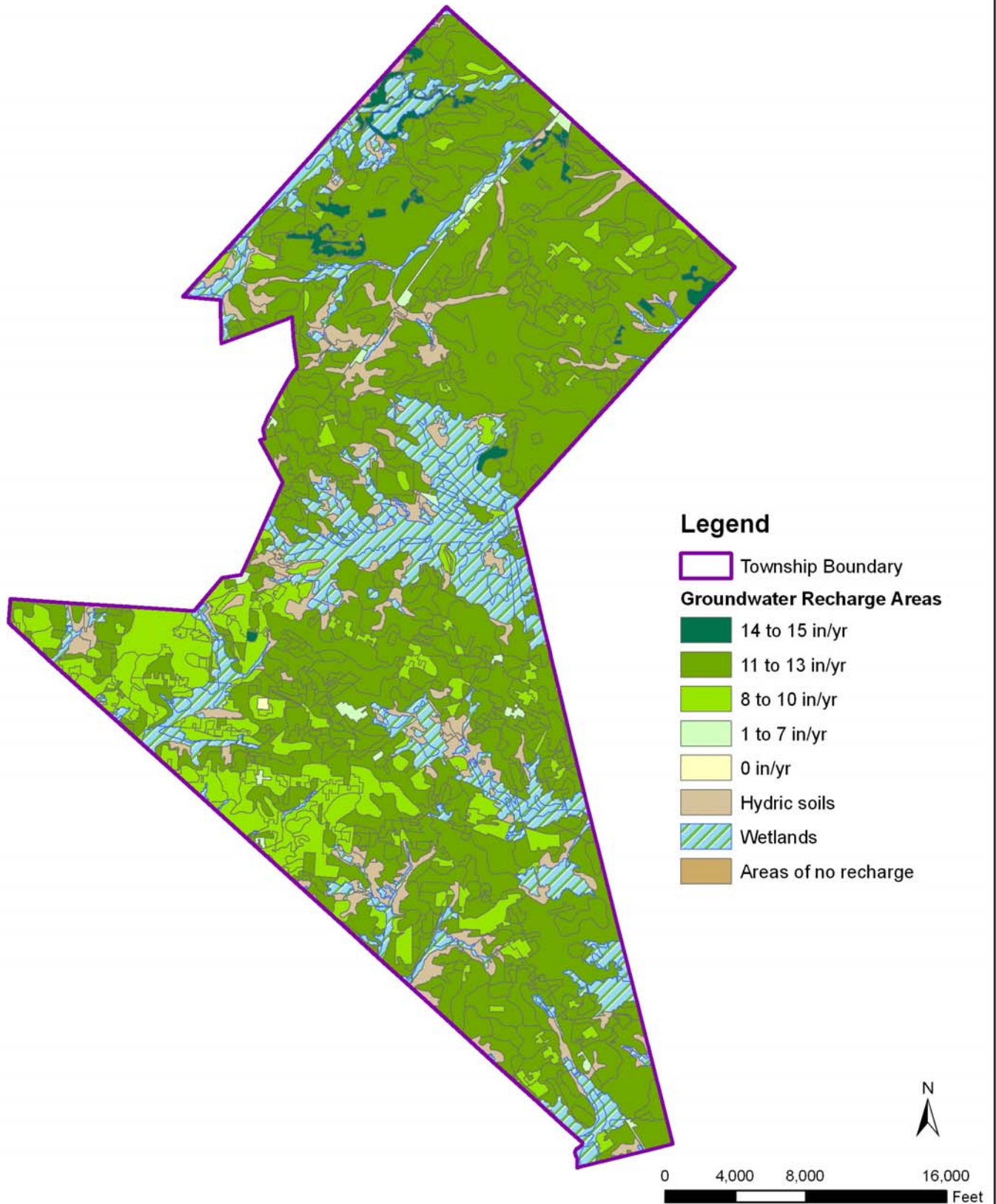


Given the rural nature of Buena Vista Township, substantial portions of the municipality are suitable for groundwater recharge. A map of the groundwater recharge area is shown on Figure C-5. This map indicates that groundwater recharge over most of the municipality is in the 11-13" per year range. These recharge areas along with the substantial area of wetlands and wetlands buffers provide for adequate stormwater infiltration throughout most of the municipality.

Wellhead protection areas are also required as part of the MSWMP and are shown in Figure C-6.

Figure C-5

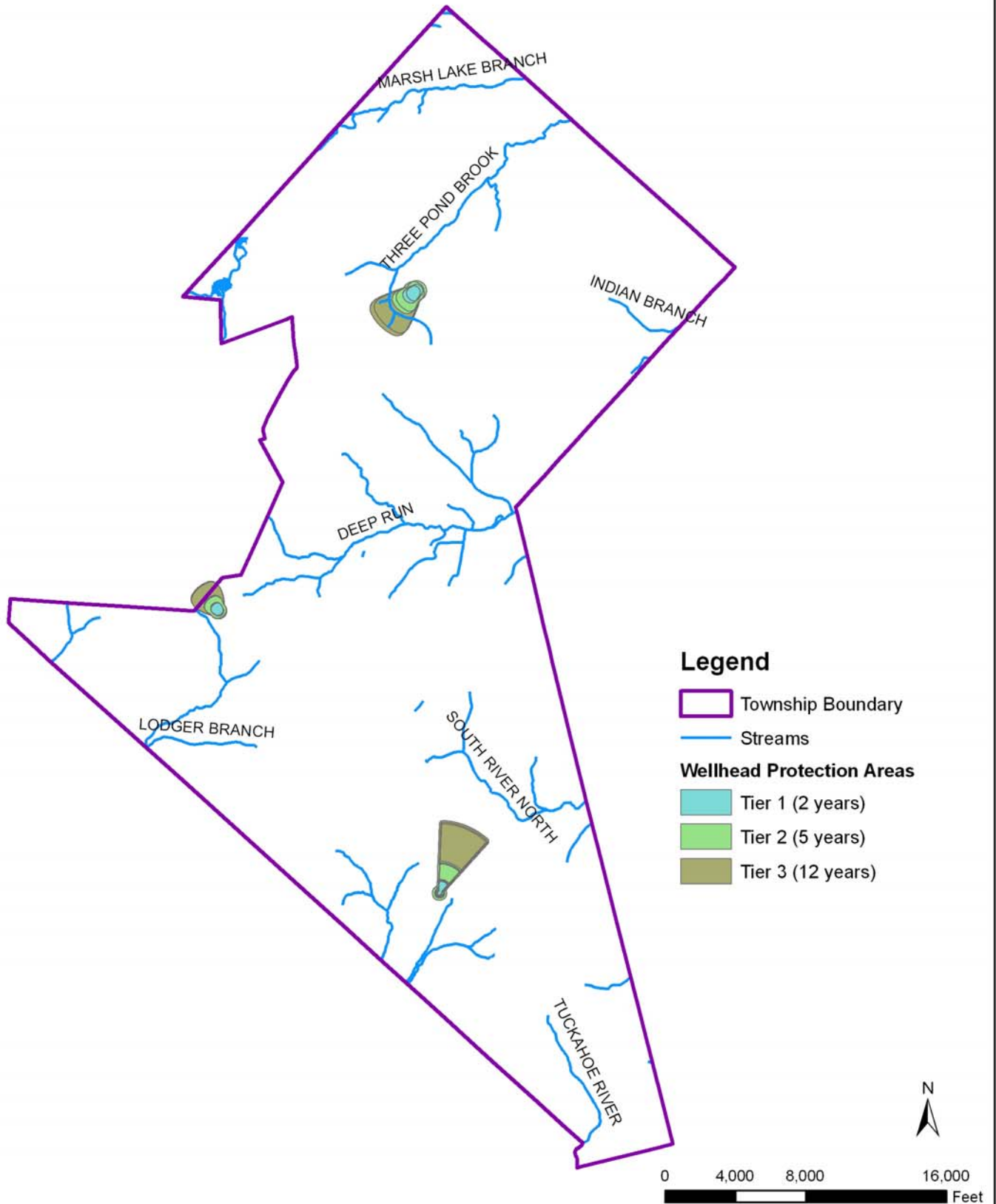
Buena Vista Township Groundwater Recharge Areas



Source: NJDEP GIS data; Atlantic County GIS data

Figure C-6

Buena Vista Township Wellhead Protection Areas



Source: NJDEP GIS data; Atlantic County GIS data

Design and Performance Standards

The Township has amended its Land Use Ordinances to incorporate the Design and Performance Standards for Stormwater Management measures as presented in N.J.A.C. 7:8-5, to minimize adverse impact of stormwater runoff on water quality and water quantity and loss of groundwater recharge in receiving waterbodies.

The design and performance standards include the language for maintenance of stormwater management measures consistent with the stormwater management rules at N.J.A.C. 7:8-5.8 Maintenance Requirements, and language for safety standards consistent with N.J.A.C. 7:8-6 Safety Standards for Stormwater Management Basins. The Ordinance Amendments will be adopted by the municipality within 12 months from the date that this Municipal Stormwater Management Plan was adopted by the Township Planning Board and then will be submitted to the County review agency along with this Municipal Stormwater Management Plan, for approval.

During construction, Township inspectors will observe the construction of the project to ensure that the stormwater management measures are constructed and function as designed.

Plan Consistency

The Township is not within a Regional Stormwater Management Planning Area and no TMDLs have been developed for waters within the Township; therefore this plan does not need to be consistent with any regional stormwater management plans (RSWMPs) nor any TMDLs. If any RSWMPs or TMDLs are developed in the future, this Municipal Stormwater Management Plan will be updated to be consistent.

The Municipal Stormwater Management Plan is consistent with the Residential Site Improvement Standards (RSIS) at N.J.A.C. 5:21. The municipality will utilize the most current update of the RSIS in the stormwater management review of residential areas. This Municipal Stormwater Management Plan will be updated to be consistent with any future updates to the RSIS.

This Municipal Stormwater Management Plan is consistent with the requirements of the Pinelands Comprehensive Management Plan (CMP). The municipality will utilize the most current update of the CMP in the Stormwater Management review. The Plan will be updated to be consistent with any future amendments to the Comprehensive Management Plan.

The Township's Stormwater Management Ordinance requires all new development and redevelopment plans to comply with New Jersey's Soil Erosion and Sediment Control Standards. During construction, Township inspectors will observe on-site soil erosion and sediment control measures and report any inconsistencies to the local Soil Conservation District.

Nonstructural Stormwater Management Strategies

The NJDEP's new Stormwater Management Rules include the specific provisions that must be addressed in a MSWMP (N.J.A.C. 7:8-4.2(c)). One requirement is that the MSWMP include an evaluation of the extent to which the Township's entire master plan (including the land use element), official map, and development regulations (including zoning ordinances) implement the principles of the Stormwater Management Rules relating to nonstructural stormwater management strategies (N.J.A.C. 7:8-5.3(b)).

Certain low impact stormwater management strategies, or low impact development (LID) techniques, seek to reduce and/or prevent adverse runoff impacts through both nonstructural and structural approaches that attempt to preserve or closely mimic the natural hydrologic response to precipitation. LID techniques control stormwater runoff and pollutants closer to the source, and provide measures that can significantly reduce the impact of development on stormwater runoff.

LIDs include the use of both nonstructural and structural stormwater management techniques, which are subsets of stormwater Best Management Practices (BMPs). LID-BMPs first attempt to minimize quantitative and qualitative changes to the hydrology, through nonstructural practices, and then, if necessary, employ structural LID techniques. LID-BMPs thus emphasize nonstructural stormwater management measures, maximizing their use prior to the use of structural LID-BMPs and standards BMPs.

Nonstructural LID-BMPs reduce stormwater runoff through techniques such as minimizing site disturbance, preserving important site hydrologic features, reducing and disconnecting impervious cover, flattening slopes, utilizing native vegetation, minimizing turf grass lawns, and maintaining natural drainage features and characteristics. Structural BMPs are considered LIDs if they are implemented close to the runoff's source; because of this, they are typically smaller in size than standard (non-LID) structural BMPs. Structural LID-BMPs include various types of basins, filters, surfaces, and devices located on individual lots in a residential development or throughout a commercial, industrial, or institutional development.

The NJDEP believes that effective, state-wide use of such practices can best be achieved through modifications to municipal master plans and land use ordinances to include LID goals and to provide for the use of specific LID-BMPs. The Stormwater Management Rules require municipalities to review their master plans and ordinances in order to incorporate LID techniques to the maximum extent practicable.

The NJDEP Stormwater Management Rules (N.J.A.C. 7:8) require in Section 5.2(s) that Major Development (disturbing one acre or more or increasing impervious surface by ¼ acre) incorporate nonstructural stormwater management strategies "to the maximum extent practicable." Nonstructural LID-BMPs are to be given preference over structural BMPs. Where it is not possible to fully comply with the Stormwater Management Rules through nonstructural LIDs, structural LID-BMPs are to be used in conjunction with standard BMPs to meet the Rules' requirements.

The NJDEP Stormwater Management Rule requires the maximum practical use of the following nine nonstructural strategies (LID-BMPs) for major development and redevelopment.

1. Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss.
2. Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces.
3. Maximize the protection of natural drainage features and vegetation.

4. Minimize the decrease in the pre-construction of “time of concentration.”
5. Minimize land disturbance including clearing and grading.
6. Minimize soil compaction.
7. Provide low maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers, and pesticides.
8. Provide vegetated open-channel conveyance systems that discharge into and through stable vegetated areas.
9. Provide preventative source controls.

N.J.A.C. 7:8-5 further requires that an applicant seeking approval for major development or redevelopment specifically identify which and how these nine nonstructural strategies are incorporated or provide an engineering, environmental, or safety reason for their non-incorporation.

In addition to these nonstructural LID-BMPs, structural stormwater management measures can be LID-BMPs. These structural BMPs become LID-BMPs by storing, infiltrating, and/or treating runoff close to the source of stormwater. Unlike standard structural BMPs that are located along a site’s drainage system, structural LID-BMPs are normally dispersed throughout a development and more closely mimic the hydrology. LID-BMPs are typically standard structural MPs, but their location, closer to the runoff source, allows them to be smaller in size. Standard structural BMPs that can be implemented at a LID scale include: drywells, infiltration systems, bioretention basins, and both surface and subsurface detention basins; downsized, to address stormwater close to its source as LIDs.

There are a number of structural stormwater BMPs that may be used to address the groundwater recharge and stormwater quality and quantity requirements of the NJDEP Stormwater Management Rules in N.J.A.C. 7:8. The structural BMPs include the following techniques (see also *New Jersey Stormwater Best Management Practices Manual*, February 2004, which includes the planning, design, construction, and maintenance guidelines for these structural BMPs):

1. Bioretention Systems
2. Constructed Stormwater Wetlands
3. Dry Wells
4. Extended Detention basins
5. Infiltration Basins
6. Manufactured Treatment Devices
7. Pervious Paving Systems
8. Rooftop Vegetated Cover
9. Sand Filters
10. Vegetative Filters
11. Wet Ponds

Other BMPs that possess similar levels of effectiveness, efficiency, and endurance may also be utilized, provided that such levels can be demonstrated.

Buena Vista Township has reviewed the Master Plan and local land use ordinances and incorporated structural stormwater management strategies (LID and standard structural stormwater BMPs) to the extent practicable and in accordance with sound planning, science, engineering and construction principles, as they apply to the Township and its unique environment.

The Township has reviewed the master plan and ordinances, and has modified sections in the Township land use and zoning ordinances to incorporate nonstructural stormwater management strategies.

Land Use/Build-Out Analysis

Build-out calculations have been prepared for Buena Vista Township, based upon the methodology described within the NJDEP's sample Municipal Stormwater Management Plan as included within Appendix C of the New Jersey Stormwater Best Management Practices Manual. The four steps undertaken to prepare this build-out analysis are as follows:

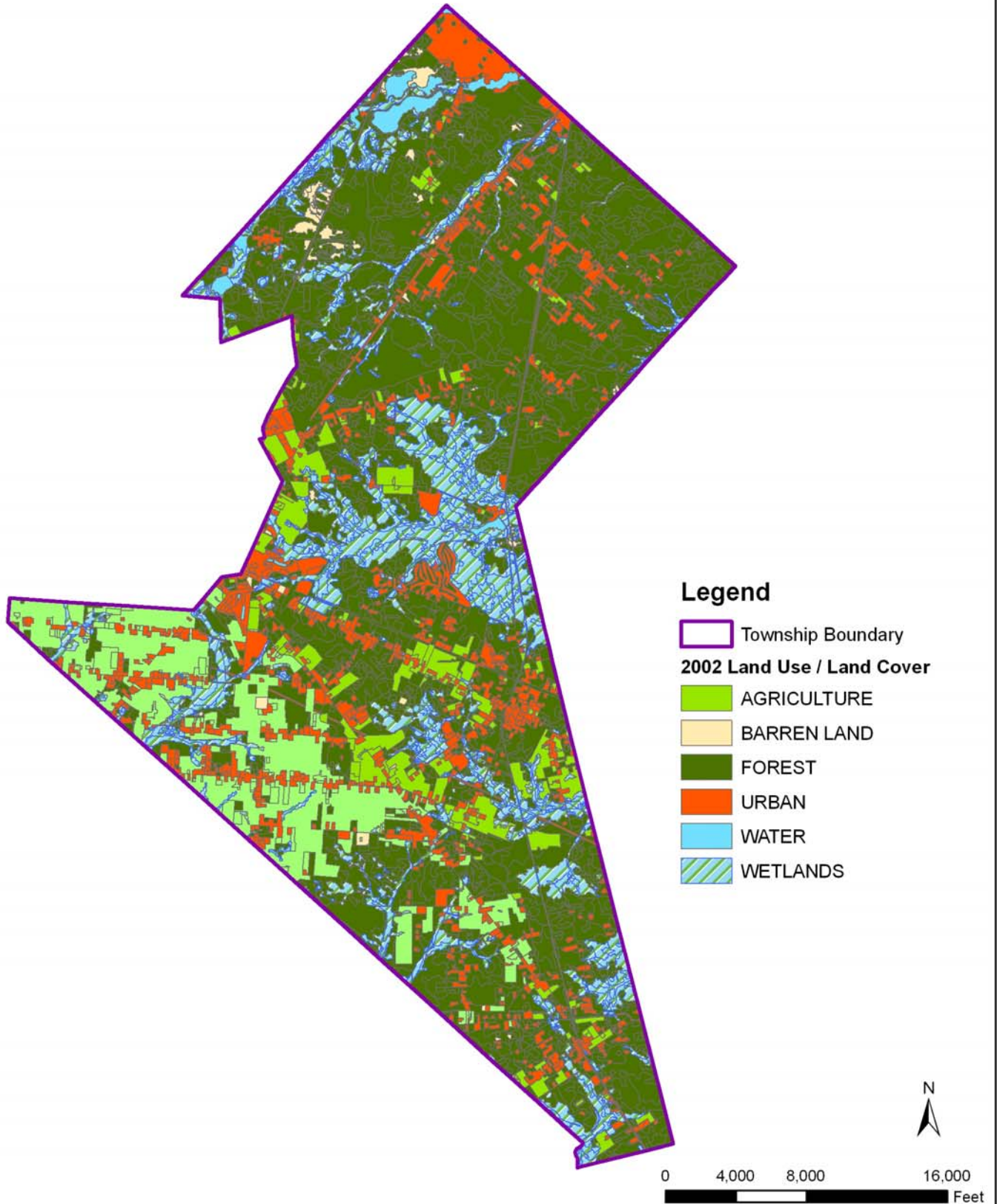
- 1. Determine the total land area within each of the HUC14s of the municipality.*
- 2. Determine the area of constrained lands within each HUC14 of the municipality.*
- 3. Determine the land available for development by simply subtracting the constrained lands from the total land area for each HUC14. In essence, the land available for development is the agricultural, forest and/or barren lands available within each HUC14. Existing residential, commercial, and industrial areas are also eligible for redevelopment and should be considered as land available for development.*
- 4. For each HUC14, complete a build-out analysis by using the municipal zoning map and applicable ordinances to determine the acreage of new development. Once the build-out acreage of each land use is determined for each HUC14, nonpoint source loadings can be determined for the build-out scenario.*

A detailed land use analysis for the Township was conducted. Figure C-7 illustrates the existing land use in the Township based on 1995/97 GIS information from NJDEP. Figure C-8 illustrates the HUC14s within the Township. The Township zoning map is shown in Figure C-9. Figure C-10 illustrates the constrained lands within the Township. Figure C-11 is a composite of the HUC14s with municipal zoning.

Table C-1 presents the NJDEP pollutant loading coefficients by land cover. The pollutant loads at full build-out are presented in Table C-2.

Figure C-7

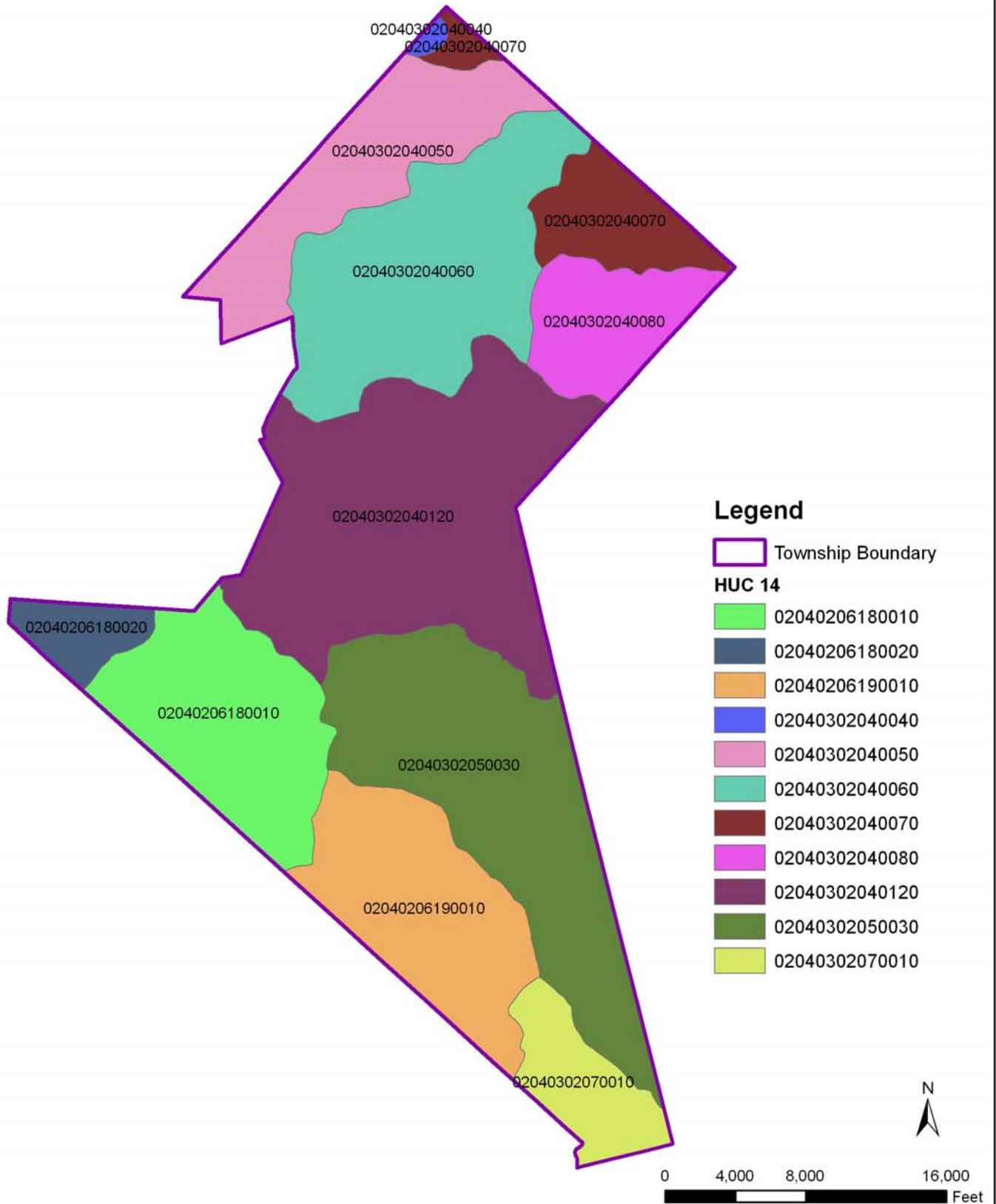
Buena Vista Township Land Use / Land Cover



Source: NJDEP GIS data; Atlantic County GIS data

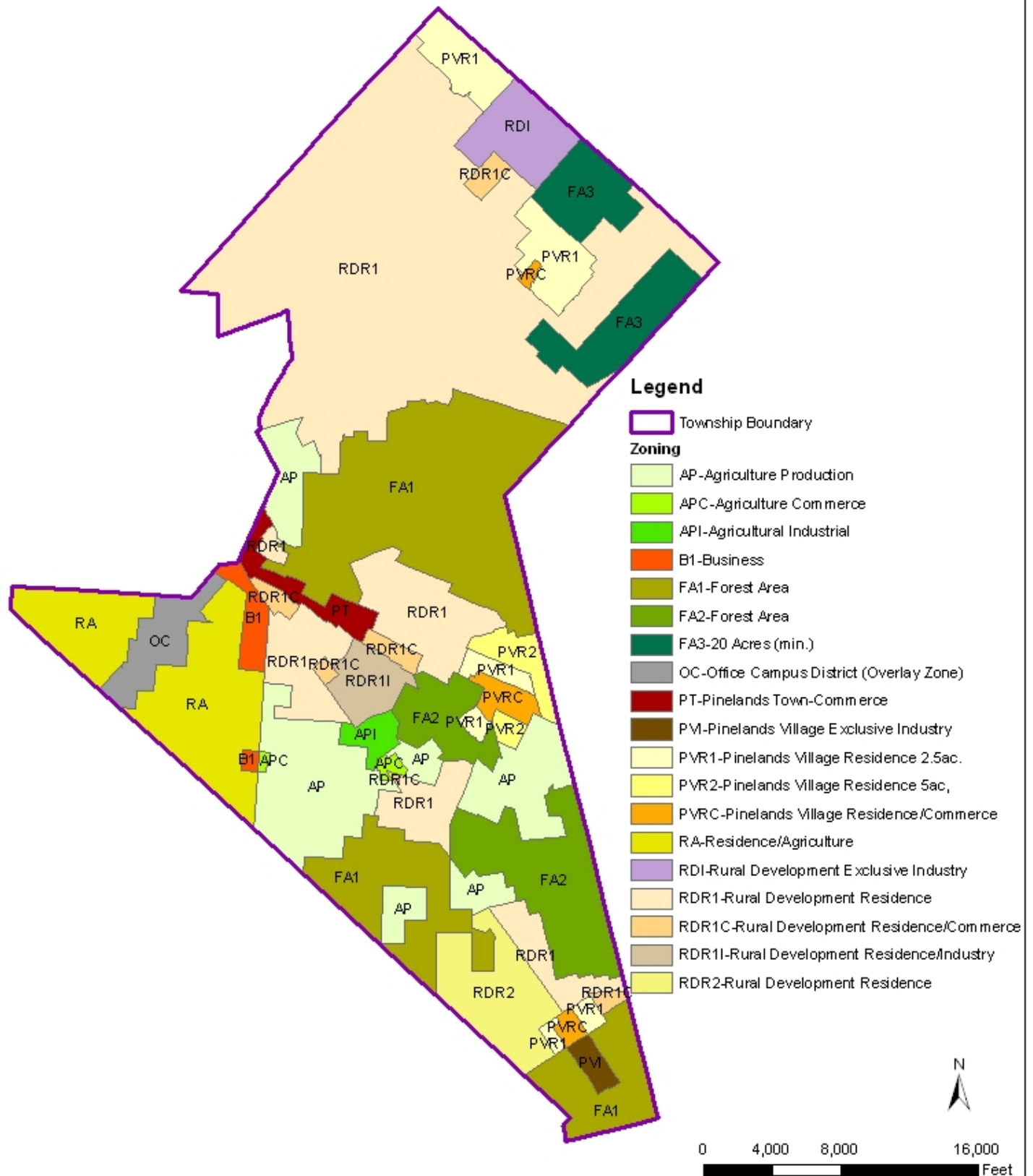
Figure C-8

Buena Vista Township Hydrologic Units (HUC14)



Source: NJDEP GIS data; Atlantic County GIS data

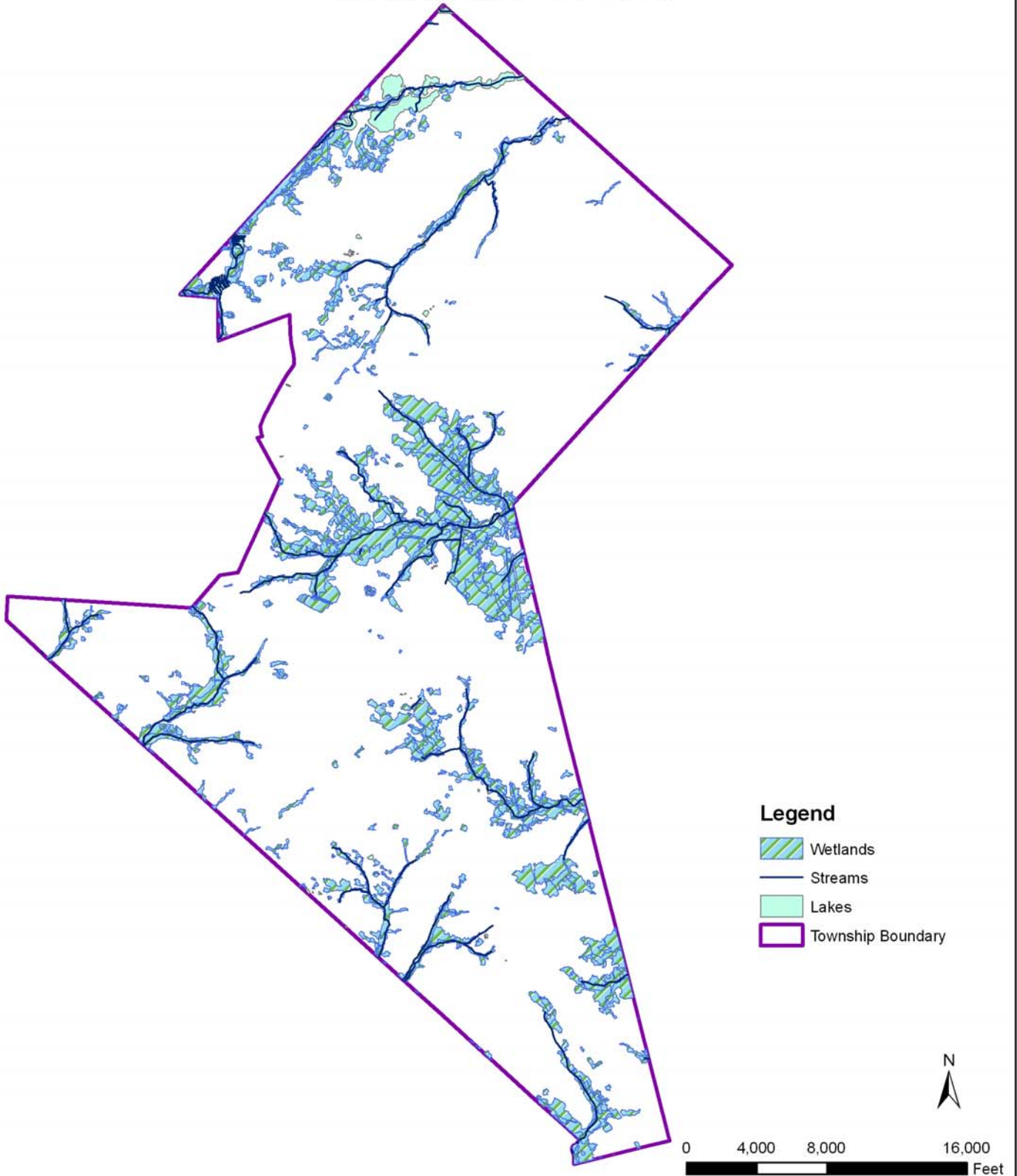
Figure C-9 Buena Vista Township Zoning



Source: NJDEP GIS data; Atlantic County GIS data

Figure C-10

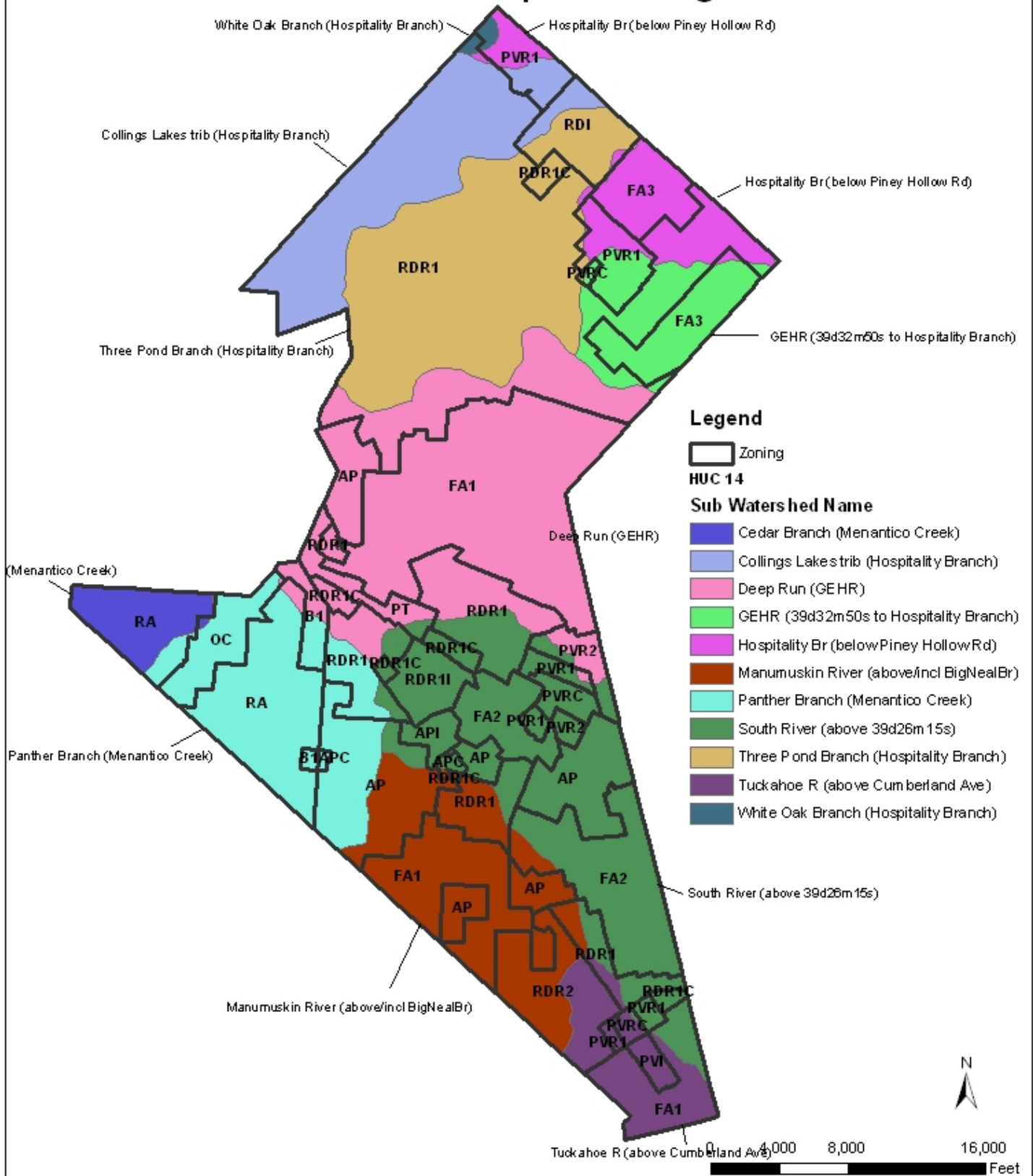
Buena Vista Township Wetlands and Waterbodies - Constrained Land



Source: NJDEP GIS data; Atlantic County GIS data

Figure C-11

Buena Vista Township Hydrologic Units (HUC14) and Municipal Zoning



Source: NJDEP GIS data; Atlantic County GIS data

Table C-1: Pollutant Loads by Land Cover

Land Cover	Total Phosphorus Load (lbs/acre/year)	Total Nitrogen Load (lbs/acre/year)	Total Suspended Solids Load (lbs/acre/yr)
High, Medium Density Residential	1.4	15	140
Low Density, Rural Residential	0.6	5	100
Commercial	2.1	22	200
Industrial	1.5	16	200
Urban, Mixed Urban, Other Urban	1.0	10	120
Agricultural	1.3	10	300
Forest, Water, Wetlands	0.1	3	40
Barrenland/Transitional Area	0.5	5	60

Source: NJDEP Stormwater BMP Manual 2004.

Table C-2: Pollutant Loads at Build-out

WMA	HUC 14 Sub-Watershed		Area (Acres)			Total Pollutant Load (Lbs/Year)		
	No.	Name	Total	Constrained	Developable	P	N	TSS
Great Egg Harbor	02040302040040	White Oak Branch (Hospitality Branch)	65.45	0.18	65.27	39.16	326.35	6,527
	02040302040050	Collings Lakes trib (Hospitality Branch)	2,338.48	623.18	1,715.30	1,029.18	8,576.5	171,530
	02040302040060	Three Pond Branch (Hospitality Branch)	3,893.34	323.21	3,570.13	2,142.1	17,850.7	357,013
	02040302040070	Hospitality Br (below Piney Hollow Rd)	1,262.18	8.95	1,253.23	501.3	5,012.9	68,927.7
	02040302040080	GEHR (39d32m50s to Hospitality Branch)	1,365.83	39.82	1,326.01	464.1	5,304	92,820.7
	02040302040120	Deep Run (GEHR)	5,713.31	1,723.76	3,989.55	1,396.3	18,352	263,310
	02040302050030	South River (above 39d26m15s)	4,582.38	766.63	3,815.75	877.6	13,355	209,866
	02040302070010	Tuckahoe R (above Cumberland Ave)	1,094.20	214.54	879.66	307.9	3,519	61,576
Maurice, Salem, and Cohansey	02040206180010	Panther Branch (Menantico Creek)	2,816.33	310.52	2,505.81	2,756.4	25,058	451,044
	02040206180020	Cedar Branch (Menantico Creek)	580.55	52.29	528.26	317	2,641	52,826
	02040206190010	Manumuskin River (above/incl BigNealBr)	2,793.84	249.67	2,544.17	1,857.2	16,283	412,156
Total			26,505.88	4,312.75	22,193.13	11,688	116,278	2,147,596

P = Total Phosphorus Load (lbs/acre/yr)
 N = Total Nitrogen Load (lbs/acre/yr)
 TSS = Total Suspended Solids Load (lbs/acre/yr)

Mitigation Plans

The “design and performance standards” section of this plan addresses stormwater management measures applicable to major development projects in Buena Vista Township. In some instances, however, site specific conditions may prevent strict compliance with these standards. In accordance with N.J.A.C. 7:8-4.2(c)11, such projects may be granted a variance or exemption from these standards by the Township Planning/Zoning Board, if a mitigation plan is approved by the Board and mitigation plan implementation is a condition of the major development project approval.

To the extent possible, a mitigation plan should offset the impacts on groundwater recharge, stormwater quantity control, and/or stormwater quality control that would be created by granting the variance or exemption to the development project. In addition, to the extent possible, the proposed mitigation project(s) should be located within the same HUC14 sub-drainage basin(s) as the major development project, and if not, within the same Watershed Management Area (See Figure C-8). For projects in the Pinelands areas, any offsite mitigation must occur within the Pinelands area and within the same drainage area as the parcel proposed for development.

A mitigation plan may include more than one mitigation project, in order to achieve the objectives of location and/or impact offsets. All mitigation projects within the Pinelands Area of Buena Vista Township, shall be included and listed within the Municipal Stormwater Management Plan in order to be permitted. The Buena Vista Township Stormwater Coordinator, Public Works Director, and Township Engineer will develop and maintain a list of mitigation projects that can be implemented in order to comply with the mitigation plan provisions of this Municipal Stormwater Management Plan. Included as part of the list of projects will be quantitative estimates of the offsets to groundwater recharge, stormwater quantity control, and/or stormwater quality control for each of the mitigation projects.

The mitigation plan must include a detailed plan and schedule for implementation of the mitigation project. Implementation may be accomplished as a part of the major development project, or the Township may accept funding for the project at the discretion of the Township. If the Township chooses to accept funding in lieu of implementation, such funding shall include any costs that must be incurred by the Township in implementing the mitigation project, including design, permitting, land and/or easement acquisition, construction, and provisions for the long-term operation and maintenance of the mitigation project.

Should additional projects be identified with the Pinelands area of BVT, they will be implemented through an amendment to the Municipal Stormwater Management Plan, adopted by the Planning Board and submitted to the Pinelands Commission for certification.

The mitigation plan must include provisions for ensuring the long-term operation and maintenance of the mitigation project, by clearly identifying the party responsible for the operation and maintenance of each mitigation project. If the Township accepts a mitigation plan that designates the Township as the responsible party for mitigation project operation and maintenance, provisions for funding the associated costs by the developer shall be included in the mitigation plan.

If implementation of a mitigation plan is a condition of approval for a major development project by the Township Zoning Board or Planning Board, such approval shall also include the requirement that the developer execute a funding agreement with the Township for mitigation plan implementation, as a

further condition of approval. The funding agreement, in form acceptable to the Township, shall provide for funding by the developer of all costs to implement the plan that will be incurred by the Township, including the cost of long-term operation and maintenance of any mitigation projects in accordance with this plan and Chapters 8 and 9 of the NJDEP Stormwater BMP Manual.

The following is a listing of potential mitigation projects within Buena Vista Township.

Groundwater Recharge

- Retrofit existing stormwater catch basins to provide for sump areas with open bottoms to permit groundwater recharge.
- Install bio-filters or other groundwater infiltration devices upstream from extensive stormwater collection systems and adjacent to wetlands and open waterbodies.

Water Quality

- Retrofit the existing stormwater management facility and stormwater collection system within the Collings Lakes residential development to provide for the removal of 80% of total suspended solids from the development. Water currently free drains to several connected lakes.
- Install vegetative strips around portions of the Collings Lakes to provide for the removal of 80% of the total suspended solids.
- Conduct studies to identify potential sources of pollution entering the Pancoast Mill Lake.
- Assist the BBMUA with treatment plant expansion and creation of on-site infiltration lagoons. Currently effluent from the BBMUA is piped to Deep Run and is contributing to pollution in that waterbody.
- Install riprap or other geotextile type material to reduce scour and transport of sediments at the Pancoast Mill Lake and downstream.
- Provide for individualized localized stormwater recharge areas outside of the roadway collections systems to further encourage groundwater recharge.

Water Quantity

- Replace cross streams as necessary throughout the municipality as the Township's aging infrastructure is leading to constriction of the conveyance systems and blockages and failures.
- Install flap valves or other similar devices at all stormwater outlets within the Collings Lakes waterbodies to prevent lake water from surcharging the stormwater collection system.

The municipality may allow a developer to provide funding or partial funding to the municipality for an environmental enhancement project that has been identified in a Municipal Stormwater Management Plan, or towards the development of a Regional Stormwater Management Plan. The funding must be equal to or greater than the cost to implement the mitigation outlined above, including costs associated with purchasing the property or easement for mitigation, and the cost associated with the long-term maintenance requirements of the mitigation measure. Buena Vista Township must expend any contributions collected within 5 years of their receipt.