

BOROUGH OF WHARTON STORMWATER MANAGEMENT PLAN

Prepared for:

Wharton Borough

10 Robert Street

Wharton, NJ 07885

Prepared by:

J. Caldwell & Associates, LLC

145 Spring Street, Suite E

Newton, NJ 07860

December 2018

STORMWATER MANAGEMENT PLAN

Wharton Borough

Contents

Introduction	3
Goals.....	3
Stormwater Discussion.....	4
Background	6
Stormwater Locations and Conditions Assessment	7
Water Quality.....	7
Groundwater Recharge	8
Net Water Availability	8
Design and Performance Standards	9
Plan Consistency	11
Nonstructural Management Strategies	12
Land Use Buildout Analysis.....	21
Stormwater Mitigation Plan	22
Mitigation Project Criteria.....	22
Specific Mitigation Projects	23
Additional Potential Project Locations	26
General Types of Mitigation Projects	26
Appendix A: Maps.....	28
Net Water Availability	29
Carbonate Rock Areas	30
Prime Groundwater Recharge Area.....	31
Waterways	32
USGS Quadrangles.....	33
Wellhead Protection Areas	34
Land Use/Land Cover.....	35
Stormwater Facilities	36
Zoning	37

Introduction

Through the passage of New Jersey Highlands Water Protection and Planning Act in 2004, the New Jersey Highlands Water Protection and Planning Council (the Highlands Council) was created and charged with developing the Highlands Regional Master Plan (RMP). Adopted in 2008, the RMP serves as a guiding document for the long term protection and restoration of the region's critical resources. Stormwater Management Plans are required by the New Jersey Department of Environmental Protection (NJDEP) (N.J.A.C. 7:14A-25). As part of the conformance to the Highlands Regional Master Plan, the Highlands Council has required each of the municipalities within the region to update their Stormwater Mitigation Plans which are then included with the municipal Stormwater Management Plans.

According to the NJDEP definition, stormwater is water resulting from precipitation (including rain and snow) that runs off the land's surface, is transmitted to the subsurface, is captured by separate storm sewers or other sewage or drainage facilities, or conveyed by snow removal equipment. In natural landscapes such as forests, the soil absorbs much of the stormwater and plants help hold stormwater close to where it falls. In developed environments, unmanaged stormwater can travel quickly, creating potential flooding and water pollution. Stormwater also serves as an important water resource as demands for clean water exceed availability.

Goals

As outlined in the New Jersey Stormwater Management Rules at N.J.A.C. 7:8-2.2 there are nine overarching goals of stormwater management planning:

1. Reduce flood damage, including damage to life and property;
2. Minimize, to the extent practical, any increase in stormwater runoff from any new development;
3. Reduce soil erosion from any development or construction project;
4. Assure the adequacy of existing and proposed culverts and bridges, and other in-stream structures;
5. Maintain groundwater recharge;
6. Prevent, to the greatest extent feasible, any increase in nonpoint pollution;
7. Maintain the integrity of stream channels for their biological functions, as well as for drainage;
8. Minimize pollutants in stormwater runoff from new and existing development in order 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;
9. Protect public safety through the proper design and operation of stormwater management basins.

STORMWATER MANAGEMENT PLAN

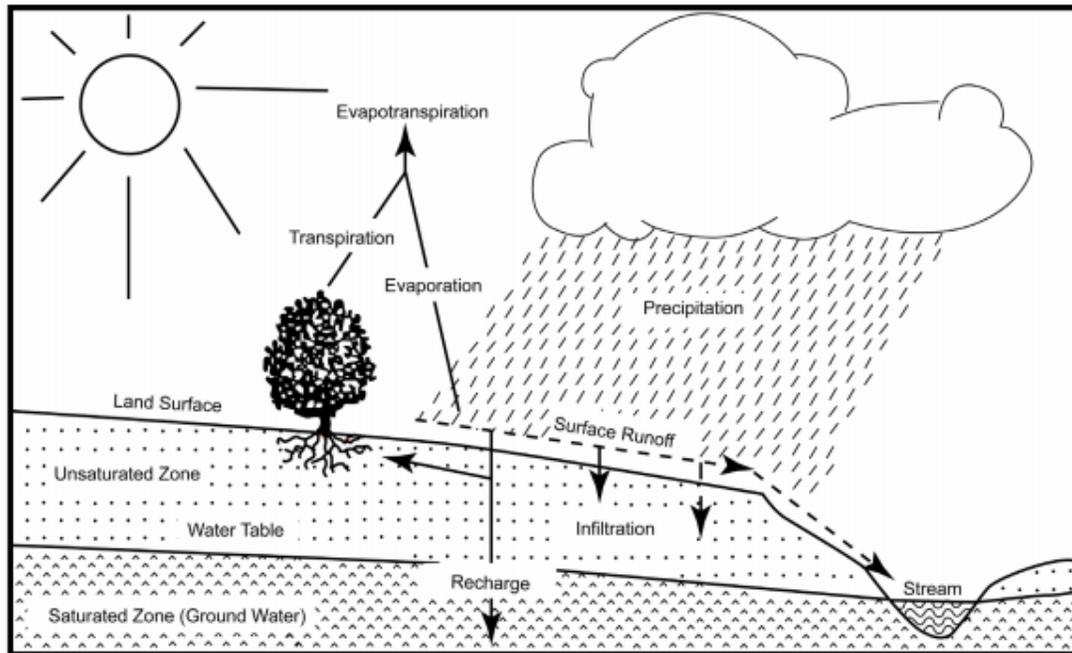
Wharton Borough

To achieve these goals, this plan outlines specific stormwater design and performance standards for new and redevelopment areas. Additionally, the plan proposes several best management practices to provide a more sustainable solution to the stormwater management practices. Preventive 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 of a site and, ultimately, an entire watershed (see Figure 1 on page 5). 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 surfaces 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 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.

Land development can also cause increased pollutant loading in stormwater runoff which 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, like 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.

STORMWATER MANAGEMENT PLAN

Wharton Borough

Background

The Borough of Wharton is 2.2 square miles in area and located in the west central portion of Morris County. Wharton is surrounded by five different municipalities including: Rockaway Township, Dover, Mine Hill Township, Roxbury Township and Jefferson Township.

The Borough is almost completely built-out with only about 7% vacant land.¹ The population of the Borough has increased from 5,405 in 1990 to 6,522 in 2010 and the 2015 estimates the population to be 6,607. These population increases have resulted in new development and subsequent changes in the landscape have the potential to increase stormwater runoff volumes and pollutant loads to the waterways in and around the Borough.

According to the 2006 Stormwater Management Plan, the stormwater management infrastructure in the Borough has not been changed significantly in the recent past.

Figure 2: Wharton Borough and Surrounding Municipalities



¹Highlands Build-Out Study

STORMWATER MANAGEMENT PLAN

Wharton Borough

Stormwater Locations and Conditions Assessment

To ensure a comprehensive and coordinated approach to stormwater management throughout the Highlands Region, the Highlands Council requires municipalities to conduct an assessment of existing stormwater structure locations. The Borough maintains GIS files of all existing stormwater structure locations. Specific outfall inspections were conducted over the course of 2017. These inspections included measurements of outfall pipes, assessments of outfall and headwall conditions, presence of scouring, assessment of flow, and photographs. The map titled “Stormwater Facilities” located in the Appendix depicts the Borough stormwater facilities including outfalls.

Water Quality

In the State of New Jersey, the Bureau of Environmental Analysis, Restoration and Standards (BEARS) is responsible for conducting and coordinating water quality assessments for all waters of State of New Jersey including data collected by non-departmental entities (example regional and local governmental agencies and volunteer monitoring organizations) and determining the causes and sources of water quality impairment.

BEARS is also responsible for determining the pollutant reductions needed for restoration of water quality, through the development and implementation of Total Maximum Daily Loads (TMDLs) or watershed restoration plans. “Water Quality Impairment” means that waters do not fully support the designated uses established for those waters by the New Jersey Surface Water Quality Standards at N.J.A.C. 7:9B.

TMDLs were established for HUC14 02030103030070, Rockaway R (74d 33m 30s to Stephens Bk), Mercury in 2010 (Total Maximum Daily Load for Mercury Impairments Based on Concentration in Fish Tissue Caused Mainly by Air Deposition to Address 122 HUC 14s Statewide) and Total Phosphorus in 2008 (Total Maximum Daily Load Report for the Non-Tidal Passaic River Basin Addressing Phosphorus Impairments).

Further the SWQS (Surface Water Quality Standards) identify the following surface waters as (See Waterways Map in the Appendix)

Name	Category
Rockaway River	FW2- TM C1
Green Pond Brook	FW2-NT C1
Spring Brook	FW2- TP C1

Source: NDEP GIS Data

The category definitions are as follows:

FW2-means the general surface water classification applied to those fresh waters that are not designated as FW1 or Pinelands Waters

TM = Trout Maintenance

NT = Non-Trout Waters

TP = Trout Production

STORMWATER MANAGEMENT PLAN

Wharton Borough

C1 = Category One waters. These waters are designated in the tables in N.J.A.C. 7:9B-1.15(c) through (i), for purposes of implementing the antidegradation policies set forth at N.J.A.C. 7:9B-1.5(d), for exceptional recreational significance, exceptional water supply significance and ecological integrity (habitat, water quality and biological functions). Category One waters are protected from any measurable change in existing water quality.

Groundwater Recharge

Ground water recharge does not occur uniformly in all areas of the Highlands Region. Recharge varies by soil, precipitation, land cover, and other factors. Some land areas will provide more recharge than others, and the best of these have been mapped by the Highlands Council as Prime Ground Water Recharge Areas. Prime Ground Water Recharge Areas are defined as the areas in each subwatershed that have the highest recharge rates and, in total, provide 40 percent of total recharge for that subwatershed (see Appendix A: Prime Ground Water Recharge Areas Map). Protection of these lands and the quality and quantity of recharge from them has a high priority in the Regional Master Plan. The technical basis and additional background information on Prime Ground Water Recharge Areas can be found in the Highlands Council's Water Resource Assessment Technical Report.

Net Water Availability

The Regional Master Plan incorporates Net Water Availability as a capacity threshold on water uses resulting from future development. Where Net Water Availability is positive, it is assumed there is water available beyond the existing demand. Where net water availability is negative, the subwatershed is deemed a Current Deficit Area, meaning existing uses are exceeding sustainable supplies. In addition, maintenance of stream flows within any HUC14 subwatersheds upstream of a Current Deficit Area is necessary without further impairing the ecological health of the stream or reducing the safe yields of water supplies. These areas are classified as Existing Constrained Areas and will be managed to ensure that the downstream deficit is not exacerbated. Appendix Map: Net Water Availability by HUC14 shows a summary of these calculations for each of the 3 subwatersheds in Wharton Borough and the values are displayed below.

HUC14	Subwatershed Name	Net_Water_
02030103030040	Rockaway R (Stephens Bk to Longwood Lk)	-0.010693415713200
02030103030060	Green Pond Brook (below Burnt Meadow Bk)	-0.707452268972000
02030103030070	Rockaway R (74d 33m 30s to Stephens Bk)	-4.058579254920000

Design and Performance Standards

The Borough has adopted the design and performance standards for stormwater management measures as presented in N.J.A.C. 7:8-5 to minimize the adverse impact of stormwater runoff on water quality and water quantity and loss of groundwater recharge in receiving water bodies. 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.

In order for the above-referenced ordinance to be consistent with the Highlands Regional Master Plan, the following will be adopted:

I. STORMWATER ORDINANCE AMENDMENTS

SECTION 2: DEFINITIONS (NEW AND AMENDED)

Carbonate Rock Area means an area where rock consisting chiefly of calcium and magnesium carbonates, such as limestone and dolomite, has been identified.

Current Deficit Area means any United States Geological Survey 14-digit Hydrologic Unit Code subwatershed area that is identified in the Highlands Regional Master Plan as having negative Net Water Availability, meaning that existing consumptive and depletive water uses exceed the capacity of the ground water supply to sustain.

Karst means a distinctive topography that indicates solution of underlying carbonate rocks (such as limestone and dolomite) by surface water or groundwater over time, often producing surface depressions, sinkholes, sinking streams, enlarged bedrock fractures, caves, and underground streams.

Major development (Amended Definition) means any development that provides for ultimately disturbing one or more acres of land. Disturbance for the purpose of this rule is the placement of impervious surface or exposure and/or movement of soil or bedrock or clearing, cutting, or removing of vegetation, or the redevelopment of previously developed sites.

Maximum extent practicable means designing stormwater management systems so that all reasonable opportunities for using non-structural stormwater practices are exhausted and a structural BMP is implemented only where absolutely necessary.

Mitigation means an action by an applicant providing compensation or offset actions for onsite stormwater management requirements where the applicant has demonstrated the inability or impracticality of strict compliance with the stormwater management requirements set forth in N.J.A.C. 7:8, in an adopted regional stormwater management plan, or in this local ordinance, and has received a waiver from strict compliance from the municipality. Mitigation shall include the implementation of the approved mitigation plan within the same drainage area where the subject project is proposed, or a contribution of funding toward a municipal stormwater control project, or provision for equivalent treatment at an alternate location, or any other equivalent water quality benefit as approved by the municipality.

STORMWATER MANAGEMENT PLAN

Wharton Borough

Redevelopment means land-disturbing activity that results in the creation, addition, or replacement of impervious surface area on an already developed or disturbed site. Redevelopment includes, but is not limited to: the expansion of a building footprint, addition or replacement of a structure, replacement of impervious surface area that is not part of a routine maintenance activity, and land disturbing activities related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

SECTION 4: STORMWATER MITIGATION REQUIREMENTS FOR MAJOR DEVELOPMENT

F: EROSION CONTROL, GROUNDWATER RECHARGE AND RUNOFF QUANTITY STANDARDS

SUBSECTION 1.B (1):

Groundwater Recharge:

(New Section) (c) Projects located in a Current Deficit Area: Where the project is located in a Current Deficit Area as identified in Exhibit A, the project shall demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures provide for one of the following provisions:

(i) Recharge 125 percent of the percentage of the average annual pre-construction groundwater recharge volume for the site (RMP Policy 2B8 & 2E1); or

(ii) In addition to complying with the requirements of section 4.F.1(b), retain on-site with no discharge, the Stormwater Quality Design Volume (SWQDv), defined as the runoff from the 1.25-inch, 2-hour rainfall event. Groundwater recharge or infiltration performed in compliance with 4.F.1.c(i) or 4.F.1.b. above may count toward required retention of the SWQDv. Where groundwater recharge will result in equal or greater retention than required to meet the SWQDv, then it shall constitute compliance with section 4.F.1.c(ii). Where meeting the groundwater recharge requirement will not result in retention of the full SWQDv, the major development shall retain any additional volume to meet the requirements of 4.F.1.c.ii.(1) through additional infiltration, or through evapotranspiration or capture and on-site re-use of rainfall. (RMP Policy 2B8)

SUBSECTION 1.B (3): THE FOLLOWING TYPES OF STORMWATER SHALL NOT BE RECHARGED:

(New Section) (c) Carbonate Rock Areas, where surficial or subsurface karst features have been identified and recharge facilities cannot be designed in a manner that would eliminate the concentrated subsurface release of stormwater (RMP Policy 1K4) (Note: the mere presence of carbonate bedrock does not constitute a karst feature).

(New Section) (d) Mitigation Required: In lieu of on-site recharge, the applicant shall be responsible for providing mitigation of the groundwater recharge volume in the required amount.

STORMWATER MANAGEMENT PLAN

Wharton Borough

The applicant should provide mitigation, on site if possible and/or practical, or within the same drainage area within which the subject project is proposed, or contribute funding toward a municipal stormwater control project, or provide for equivalent treatment at an alternate location, or provide for another equivalent water quality benefit, in lieu of implementing the required groundwater recharge volume on their specific site. (RMP Policies 2D3, 7G2 & 7G3)

SECTION 6: STANDARDS FOR STRUCTURAL STORMWATER MANAGEMENT MEASURES

(New Section) D. Mitigation Required: A waiver from strict compliance with the requirements of the Municipal Stormwater Ordinance shall be approved by the municipality only in those cases where an applicant has demonstrated the inability to strictly comply with any standard of the municipal stormwater ordinance. A waiver from strict compliance for such projects can only be obtained if the applicant agrees to undertake a suitable mitigation measure identified in the mitigation section of the municipality's Stormwater Management Plan. In such cases, the applicant must submit a mitigation plan detailing how the project's failure to strictly comply will be compensated. In cases where a waiver is granted, an applicant should provide mitigation, if possible and/or practical, within the same drainage area within which the subject project is proposed, or contribute funding toward a municipal stormwater control project, or provide for equivalent treatment at an alternate location, or provide for another equivalent water quality benefit, in lieu of implementing the required stormwater control measures on their specific site. (RMP Policies 2D3, 7G2 & 7G3)

Plan Consistency

The Borough is part of the Jackson Brook Regional Stormwater Management Plan. If necessary this plan will be updated in the future to be consistent with the regional plan.

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. The Municipal Stormwater Management Plan will be updated to be consistent with any future updates to the RSIS.

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

This plan has been updated to be consistent with the Highlands Regional Master Plan. This plan recommends updates to the municipal stormwater ordinance to maintain consistency between this plan, the Highlands Regional Master Plan and the Stormwater Control Ordinance.

Nonstructural Management Strategies

The 2006 Stormwater Management Plan listed sections of the Borough land use and zoning ordinances that may be modified to incorporate nonstructural stormwater management strategies. These recommendations were reviewed and the following updates are recommended. Recommended changes in §165-62, §165-78, and §165-98 relating to tree protection may be subject to a future tree protection trust fund ordinance. (Modifications are noted in ***bold italic***)

§165-57 Easements; natural features; utilities.

B. Natural features such as trees, ***forested areas***, brooks, hilltops and views shall be preserved whenever possible in designing any subdivision containing such features. ***Trees six (6) inches or greater in diameter should be preserved to enhance soil stability. Additionally, landscaping should incorporate the use of native species.*** (See §165-98, Tree Preservation, and §165-99, Steep Slopes.)

§165-62 Shade trees, planting strips and landscaping.

A. Shade trees shall be provided in all major residential subdivisions and in minor subdivisions where deemed appropriate by the Planning Board. Trees shall be planted within the subdivision along each side of the street at proper intervals and in types, sizes and locations conducive to healthy growth, with graded and seeded or sodded planting strips within street rights-of-way, and according to any standards adopted by the Governing Body or Borough Shade Tree Commission, so as not to interfere with street paving, sidewalks or utilities. ***Forested areas located on the project site shall be identified on the project plans. Trees six (6) inches or greater in diameter within the forested area shall be identified on the project plans. At least 30% of the forested area shall be preserved. If preserving 30% of the forested area creates a hardship for the applicant the municipal engineer will determine the appropriate percentage.***

§165-65 Off-street parking requirements.

D. Parking area design standards

(5) Off-street parking construction.

(a) All off-street parking areas shall be graded and drained so as to dispose of all surface water in a manner so as not to unreasonably impair the surroundings.

(b) All off-street parking areas, aisles and driveways shall be surfaced with asphalt, bituminous or cement binder pavement according to specifications established for this purpose by the Borough Engineer.

(c) All parking areas and access drives shall be edged by a concrete or Belgian block not exceeding six inches above the paved surface or ground level.

(d) When deemed appropriate by the Borough Engineer, the developer shall incorporate into the design flush curbs with curb stops as an alternative curbing

with curb cuts to allow the discharge of stormwater into landscaped areas to facilitate infiltration of stormwater.

(e) When deemed appropriate by the Borough Engineer, the developer shall incorporate into the design naturally vegetated swales for water quality.

(f) When deemed appropriate by the Borough Engineer, pervious paving may be used in parking areas of low volume traffic, such as overflow parking.

§165-68 Sidewalks.

Sidewalks shall be installed in locations determined by the approving authority to be in the interest of public safety considering the probable volume of pedestrian traffic, the adjoining street classification, school bus stops, the development's location in relation to other populated areas and the general type of improvement intended. Where required, sidewalks should be at least four feet wide and located as approved by the approving authority. Sidewalks shall be placed upon a compacted subgrade overlaid with at least four inches of porous material such as sand or gravel. Concrete sidewalks shall be at least four inches thick, except at points of vehicular crossing where they shall be at least six inches thick, of Class B concrete having a twenty-eight-day compressive strength of 4,000 pounds per square inch, and shall be air-entrained. Blacktop or sidewalks of other approved materials shall be constructed as approved by the approving authority upon the advice of the Borough Engineer. Where sidewalks cross curbs, curb ramps shall be provided as outlined in § 165-67, Curbs. Preformed expansion joint material shall be placed at twenty-foot maximum intervals where sidewalks abut curbing or a structure. ***Sidewalks shall be designed to allow the discharge of stormwater onto adjacent lawns to facilitate infiltration as approved by the approving authority upon the advice of the Borough Engineer,***

§165-69 Drainage.

All streets shall be designed to accommodate storm drainage along streets, including the installation of drainage inlets and pipes. Any system shall be adequate to handle all water which originates within the development and beyond, calculated on the basis of maximum potential development as permitted under this chapter. No water shall be diverted as to overload existing drainage structures on other lands without proper and approved provisions being made for taking care of these conditions, including off-tract improvements.

A. A twenty-five-year storm curve shall be used in computing stormwater runoff.

B. The pipe size shall be determined by acceptable drainage design procedures but shall not be less than 15 inches in diameter ***or as deemed appropriate by the Borough Engineer.***

C. Drainage inlets shall be located at intervals of not more than 400 feet or such shorter distances as required to prevent the flow of surface water from exceeding six cubic feet per second at the drainage inlet. Access manholes shall be placed at maximum five-hundred-foot intervals throughout the system and at pipe junctions. Drainage inlets shall comply with Chapter 267, Stormwater Control, § 267-4E(3), of the Code of the Borough of Wharton.

STORMWATER MANAGEMENT PLAN

Wharton Borough

D. Dished gutters on Borough streets shall be permitted only at intersections involving local streets. Dished gutters shall not be permitted on arterial or collector streets.

E. Storm drain pipes running longitudinally along streets shall not be located under curbing.

F. Storm drain pipes shall be the size specified and laid to the exact lines and grades approved by the Municipal Engineer. Specifications for manholes, inlets and storm drains shall follow the ***NJDOT Standards and Specification for Road and Bridge Construction, 2001 Edition, and supplements thereto.***

G. Grading shall direct drainage away from all buildings, prevent the collection of stormwater in pools and avoid the concentration of stormwater from one lot to another.

H. Where any development is traversed by a watercourse or drainage ditch, a drainage right-of-way easement shall be provided and dedicated to the Borough of sufficient width to accommodate expected stormwater runoff in the future based upon reasonable growth potential in the Borough. A minimum of 15 feet beyond the bank top on at least one side shall be provided for access to the drainage right-of-way. See §165-57.

I. Where storm drain pipes are installed outside of streets, easements or rights-of-way shall be required in accordance with §165-57.

J. Drainage shall be designed to incorporate the use of naturally vegetated swales to facilitate infiltration as approved by the approving authority upon the advice of the Borough Engineer.

§165-70 Easements.

A. Easements shall be alongside and/or rear property lines where possible and shall not be less than 15 feet wide.

B. All easements shall be dimensioned on the plat and shall be identified as follows: "(insert purpose of easement) easement granted to the Borough of Wharton as provided for in the Wharton Land Use and Development Regulations Ordinance."

C. Where a subdivision is traversed by a watercourse, drainageway, channel or stream, there shall be provided a stormwater easement or drainage right-of-way conforming substantially with the lines of such watercourses. The size of such easements or rights-of-way shall be approved by the Borough Engineer.

§165-75 Natural features.

Natural features, such as trees, ***forested areas***, brooks, swamps, hilltops and views, shall be preserved whenever possible. On individual lots, care shall be taken to preserve selected trees (***six (6) inches or greater in diameter***) to enhance soil stability and the landscape treatment of the area. ***Additionally, landscaping should incorporate the use of native species.*** (See §165-98, Tree Preservation, and §165-99, Steep Slopes.)

§165-76 Off-site and off-tract improvements.

Before final approval, the approving authority may require the payment of the developer's pro-rata share of the following off-site and off-tract improvements: street improvements, water system, sewerage, drainage facilities and easements therefore. ***Off-site and off-tract stormwater management and drainage improvements should conform to the Design and Performance Standards in Chapter XX "Stormwater Control".***

§165-78 Shade trees, planting strips and landscaping.

A. Shade trees shall be provided on all site plans as deemed appropriate by the Planning Board. All shade trees shall have a minimum diameter of 2.5 inches measured three feet above the ground and shall be of a species approved by the approving authority. Trees shall be planted 40 feet to 60 feet apart and parallel to but no more than 20 feet from the curb line and shall be balled and burlapped, nursery grown, free from insects and disease, and of true species and variety. Stripping trees from a lot or filling around trees on a lot shall not be permitted unless it can be shown that grading requirements necessitate removal of trees, in which case those lots shall be replanted with trees to reestablish the character of the area and to conform to adjacent lots. Dead or dying trees shall be replaced by the developer during the next recommended planting season. Parking lots shall be planted as required in §165-65, Off-street parking requirements. ***Forested areas located on the project site shall be identified on the project plans. Trees six (6) inches or greater in diameter within the forested area shall be identified on the project plans. At least 30% of the forested area shall be preserved. If preserving 30% of the forested area creates a hardship for the applicant the municipal engineer will determine the appropriate percentage.***

§ 165-81 Stormwater runoff.

A. All developments shall incorporate on-site stormwater facilities that will encourage the recharging of underground aquifers and/or the slowing down of the rate stormwater leaves the site. All development shall comply with Chapter 267, Stormwater Control, of the Code of the Borough of Wharton.

B. Where the amount of runoff determined by the Municipal Engineer is sufficient to justify detention of peak flow, one or more detention basins shall be required. Each detention basin shall have a capacity to accept all surface water directed to it from a one-hundred-year storm event, with outlets to permit complete draining of the maximum capacity of the detention basin in not more than 36 hours.

C. Developments may incorporate other on-site stormwater detention or impoundment facilities in the following manner:

(1) Swales to retard water runoff. Water velocity shall not exceed three feet per second. The water may be directed to impact still basins to evaporate and percolate. The swales shall be seeded and maintained in lawn area as appropriate.

STORMWATER MANAGEMENT PLAN

Wharton Borough

(2) Impoundment/detention basins along streams that maintain steady flows of water may be constructed, provided that they meet the standards and have the approval of the New Jersey Department of Environmental Protection.

(3) Detention of stormwater on roof surfaces may be designed.

D. Where storm drains are installed outside streets, easements or rights-of-way shall be required in accordance with §165-70 Easements. Stormwater management plans shall be designed and prepared in accordance with the latest NJDEP guidelines for stormwater management.

E. Subdivisions and Site Plans shall submit a Stormwater Management Control Plan and report that complies with Section 9 in Chapter 267 “Stormwater Control”.

§165-97 Buffer areas

[Amended 12-20-1999 by Ord. No. O-20-99]

A landscape buffer shall be provided within any nonresidential zone where a development abuts or is located across from a residential zone, or residentially developed property. The buffer shall provide a year-round visual screen to minimize adverse impacts from the site on adjacent properties. The following buffer area and landscaping requirements shall apply:

Zone	Buffer Width (feet)
A, AH-1 and AH-2	25
CBD	10
B-1	10
B-2	30
I-1	30
I-2	30
I-3	30
OAL	30

A. Buffer area requirements for hotels are as specified in § 165-95F.

B. Buffer areas will be contiguous with residential property lines and shall be of uniform width.

C. If the buffer is less than 20 feet wide, the applicant may be required to erect and landscape a six-foot-high stockade fence within the buffer area, parallel to the lot line of the abutting residential lot.

D. Buffer areas shall be maintained and kept clean of all debris, rubbish, weeds and tall grass. Any screen planting shall be maintained permanently, and any plant material which does not live shall be replaced within one year or one growing season.

E. No structure, activity, storage of materials, driveways or parking of vehicles shall be permitted in the buffer area, except permitted signs as specified in the district regulations.

F. Requirements for planting in buffer area.

STORMWATER MANAGEMENT PLAN

Wharton Borough

(1) A solid and continuous landscaped screen shall be planted and maintained to conceal the parking and loading areas, eliminate the glare of vehicle lights throughout the year and camouflage the building from the abutting residential areas. The landscaped screen shall consist of evergreen trees, such as hemlock, Douglas fir, etc. Evergreen trees shall not be less than eight feet high when planted, and the lowest branches shall be not more than one floor above the ground. ***In addition to the trees mentioned above, consideration should be given to the use of native species. Native species require less water and fertilization.*** In the event that the existing evergreen trees do not cover the required area from the ground, said landscaping screen shall be supplemented with evergreen shrubbery. ***When possible, buffer areas should be used for stormwater recharge areas and where possible to disconnect impervious and to treat stormwater from impervious surfaces.***

§165-98 Tree preservation.

A. The Borough of Wharton finds that the development of unimproved or vacant land for the purpose of erecting home sites has resulted in indiscriminate and excess cutting of trees upon tracts of land and has resulted in creating increased surface drainage and soil erosion, thereby increasing municipal costs to control drainage within the Borough. It further finds that such excessive removal and destruction of trees impairs the proper occupancy of existing residential areas and impairs the stability and value of improved and unimproved real property in such areas, with attendant deterioration of conditions affecting the health, safety and general welfare of the inhabitants of the Borough, and further finds that regulation of the indiscriminate removal of trees is within the police power of the Borough.

B. Definitions. For purpose of this section, the following words shall have the meanings indicated:

APPROPRIATE DECISIONAL AUTHORITY The municipal entity, either the Zoning Officer or Planning Board, to which the application for tree removal permit is submitted.

DRIPLINE The limiting line established by a series of perpendicular drop points marking the maximum radius of the crown of an existing tree but not less than six feet from the trunk, whichever is greater.

PERMITS A license issued by the Construction Code Official or Zoning Officer to remove or destroy trees.

TREE Any living tree having a trunk of a diameter of eight inches or greater measured at a height of three feet above natural grade.

C. Cutting or removal restricted. With the exception of the exemptions set forth in § 165-98E, no person shall cut or remove or cause to be cut or removed any tree with a diameter of eight inches or greater upon any lands within the Borough unless the cutting or removal can be accomplished in compliance with the provisions of this chapter. ***Forested areas located on the project site shall be identified on the project plans. Trees six (6) inches or greater in diameter within the forested area shall be identified on the project plans. At least 30% of the forested area shall be preserved. If preserving 30% of the forested area creates a hardship for the***

STORMWATER MANAGEMENT PLAN

Wharton Borough

applicant, the Municipal Engineer will determine the appropriate percentage. Additionally, the following shall not be permitted:

- (1) No person shall place any guy wire, brace or other device on any tree in such a manner as to injure it;
- (2) No person shall hitch or fasten an animal to any tree or shrub upon a public highway or to any guard or support provided for the same or permit an animal to bite or otherwise injure any tree or shrub;
- (3) No person shall permit any brine, gas or injurious chemical or liquid to come in contact with the stump or roots of any tree or shrub upon a public highway, other than routine salting for hazardous road conditions as affects the health and safety of the general public; and
- (4) No person shall prevent, delay or interfere with any lawful work undertaken by the Construction Official or his authorized agent.

§165-100 Performance standards.

A. General application. All **projects that meet the definition of development in the Chapter 267 of the Borough Ordinances, "Stormwater Control"** shall comply with the requirements of Chapter 267, nonresidential uses, either existing or proposed, shall be subject to the following standards.

B. Compliance with performance standards.

- (1) Prior to commencement of construction and/or operation. Any application for a building permit or a certificate of occupancy for a use which shall be subject to performance standards shall be accompanied by a sworn statement by the owner of subject property that said use shall be operated in accordance with the performance standards set forth herein.
- (2) Continued compliance. Continued compliance with performance standards shall be required and enforcement of continued compliance with these performance standards shall be enforced by the Construction Official, Borough Engineer, Health Officer and Fire Prevention Bureau.

C. Determination where performance standards are to be measured. The location where determinations are to be made for measurement of performance standards shall be made as follows:

- (1) At property lines of the use creating such element for vibration, glare, air pollution, odor, dust, water pollution or noise.
- (2) At the point of emission for smoke.

D. Performance standards.

- (1) Vibration. No vibration shall be permitted which is detectable without instruments at points of measurement specified in § 165-100C herein.

STORMWATER MANAGEMENT PLAN

Wharton Borough

(2) Glare. No direct or sky-reflected glare shall be visible at the points of measurement specified in § 165-100C herein.

(3) Smoke.

(a) The emission standard of this chapter or as promulgated by the New Jersey Department of Environment Protection, whichever is more restrictive, shall pertain.

(b) No emission shall be permitted, from any chimney or otherwise, of visible gray smoke at a shade equal to or darker than No. 1 on the Power's Micro-Ringelmann Chart published by McGraw Hill Publishing Company, Inc., copyright 1954, being a direct facsimile reduction of a standard Ringelmann Chart as issued by the United States Bureau of Mines.

(c) The provisions of this subsection shall not apply to:

[1] Visible gray smoke of a shade not darker than No. 2 of said chart which may be emitted for not more than four minutes in any thirty-minute period.

[2] Smoke resulting from any fire ignited solely for the purpose of training or research in fire prevention or protection.

[3] Smoke from locomotives, the shade or appearance of which is equal to but not darker than No. 3 of the Power's Micro-Ringelmann Chart for a period or periods aggregating no more than 30 seconds in any three consecutive minutes, or smoke of said density for a period aggregating no more than four minutes in any 15 consecutive minutes when building a new fire.

[4] Household fireplaces.

(4) Odors. There shall be no emission of odorous gases or other odorous matter in such quantities as to be offensive as measured as set forth in § 165-100C.

(5) Fly ash and dust. No emission of any fly ash shall be permitted to be discharged from any stack, chimney or by other means into the open air in excess of the quantity set forth in regulations promulgated by the New Jersey Department of Environmental Protection.

(6) Noise (see Chapter 196, Noise, and current NJDEP standards).

(a) There shall be no noise from any source other than transportation facilities or temporary construction work which shall exceed the values given in the following table in any octave band or frequency. The sound level analyzer that conforms to the specifications published by the American Standard Sound Level Meters for Measurement of Noise and Other Sounds, Z 24, 3-1944, American Standards Association, Inc., New York, New York and the American Standard Specifications for an Octave Band Filter Set for the Analysis of Noise and Other Sounds, Z 24, 10-1953, American Standards Association, Inc., New York, New York shall be used.

STORMWATER MANAGEMENT PLAN

Wharton Borough

Frequency Band in Cycles Per Second CM (2)	Sound Level in Decibels Re 0.0002 DYNE- CM (2)
0 to 75	65
75 to 150	50
150 to 300	44
300 to 600	38
600 to 1,200	35
1,200 to 2,400	32
2,400 to 4,800	29
Above 4,800	26

(b) If objectionable noises due to intermittence, beat frequency or hammering exist or if the noise is not smooth and continuous, corrections shall be made to the above tables by subtracting five decibels from each decibel level given.

(7) Radioactivity or electrical disturbance. No activities shall be permitted which emit dangerous radioactivity. No activities shall be permitted where electrical disturbances adversely affect the operation of any equipment. All applicable federal and state regulations shall be complied with.

(8) Fire and explosion hazard.

(a) All activities involving storage of flammable and explosive materials shall be provided with adequate safety devices against the hazard of fire and explosion and adequate fire-fighting and fire-suppression equipment and devices standard in this industry. Burning of waste materials in open fires is prohibited. The relevant provisions of state and local laws and regulation shall also apply.

(b) All raw materials, fuels and finished products shall be stored in underground tanks. The storage of crude oil or any other volatile or inflammable liquid in aboveground tanks with individual capacity greater than 500 gallons is prohibited.

(9) Liquids or solid waste. There shall be no discharge of any wastes of any kind into any river, reservoir, pond or lake. The discharge of untreated wastes into any streams shall also be prohibited. All methods of sewage and industrial waste treatment and disposal shall be approved by the Borough and the New Jersey State Department of Environmental Protection.

(a) No person shall, within the Borough of Wharton, sweep, throw place or otherwise deposit in or upon any sidewalk, street, gutter, public alley, park or parking area, or any other public place, any dirt, rubbish, paper, garbage, filth, ashes, glass, or refuse of any kind, or suffer or the same to be done that is not contained and has the ability to infiltrate into the stormwater system.

(b) No person shall, within the Borough of Wharton, direct, discharge, or otherwise drain or cause or permit the direction, discharge, flow, or drainage into any gutter, or upon or across any sidewalk, street, public alley, park, or parking area or any other public place or private place of any:

STORMWATER MANAGEMENT PLAN

Wharton Borough

[1] Refuse or wastewater from any sink, stable, toilet, septic tank, cesspool, sewer lateral or sewerage disposal unit.

[2] Waste or wash water from any laundry, automobile filling station, garage or car-washing establishment.

(10) Stormwater management facilities. The maintenance of stormwater management facilities shall comply with Section 10: Maintenance and Repair in Chapter 267 “Stormwater Control”.

Land Use Buildout Analysis

The 2009 Wharton Borough Municipal Build-Out Report, prepared by the State of New Jersey Highlands Water Protection and Planning Council, evaluated land based capacity, utility capacity and resourced based capacity. The report states that Wharton Borough has 108 acres (0.17 square miles) of potential developable land, including both vacant and redevelopable land. According to stormwater regulations, municipalities with under one square mile of developable land are exempt from preparing a detailed build-out analysis. However, the 2009 Highlands Build-Out Report identified the following build-out results:

Municipal Build-Out Results with Resource and Utility Constraints

Residential units- Sewered	18
Septic System Yield	7
Total Residential Units	25
Non Residential Jobs- Sewered	50

Stormwater Mitigation Plan

In accordance with N.J.A.C. 7:8-4.6, a municipality may grant a variance or exemption from the design and performance standards for stormwater management measures provided the municipal Stormwater Management Plan includes a Stormwater Mitigation Plan in accordance with N.J.A.C. 7:8-4.2(c)11. The mitigation plan identifies measures required to offset any potential impact created by granting the variance or exemption.

This mitigation plan is provided for a proposed development that is granted a variance or exemption from the stormwater management design and performance standards. Presented is a hierarchy of options. The applicant is required to choose one of the projects listed in item 1 below. If there are no available projects under item 1, then as an alternative the applicant may propose a mitigation project that meets the requirement of item 1 below as the first option. If the applicant is unable to identify a suitable project that meets the requirement of Item 1, as determined by the Borough of Wharton, the applicant must propose a project that meets the requirements of either item 2 or item 3 below. The Borough of Wharton prior to implementation must approve all mitigation projects proposed by an applicant.

Mitigation Project Criteria

1. The mitigation project must be implemented in the same drainage area as the proposed development. The project must provide additional groundwater recharge benefits, or protection from stormwater runoff quality and quantity from previously developed property that does not currently meet the design and performance standards outlined in the Municipal Stormwater Management Plan. The developer must ensure the long-term maintenance of the project, including the maintenance requirements under Chapter 8 and 9 of the NJDEP Stormwater BMP Manual.

STORMWATER MANAGEMENT PLAN

Wharton Borough

Specific Mitigation Projects

Robert Street Park (Block 1713, Lot 1)



HUC02030103030070

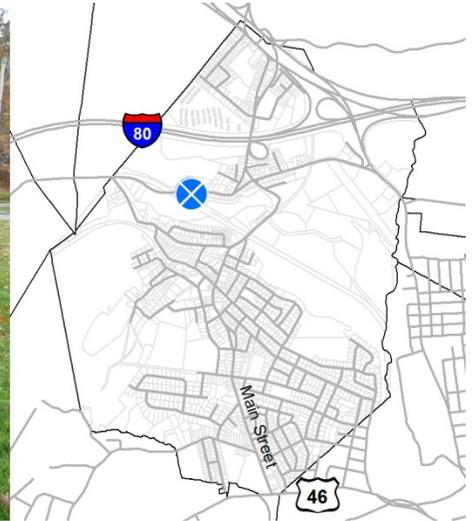
Water Quality, Water Quantity and Groundwater Recharge

This project offers multiple opportunities for improving stormwater management in and around Robert Street Park. There are two primary objectives of the Robert Street Park projects. The first is to improve drainage and treatment of stormwater runoff from the park parking lots. This can be achieved by the creation of bio-swales and bio-retention systems to be located in the vicinity of the lower parking lot towards the basketball court. The second project is proposed to improve the drainage and treatment of stormwater in and around the fields. This can be achieved through daylighting of existing drywells and drainage pipes. The utilization of non-structural stormwater management techniques may include bio-swales and bio-retention systems.

STORMWATER MANAGEMENT PLAN

Wharton Borough

Dewey Avenue Park (Block 703, Lot 28)



HUC02030103030070

Water Quality, Water Quantity and Groundwater Recharge

The Dewey Avenue Park project proposes the daylighting of existing drainage piped areas in the park. Existing drainage collects stormwater from Dewey Avenue and discharges to a drainage swale located along the railroad embankment. The intent of the project is to utilize green stormwater management techniques to treat stormwater and allow for groundwater recharge by constructing a bio-swale/rain garden. This project is located on Borough-owned property and offers an educational opportunity to showcase a non-structural stormwater management system.

STORMWATER MANAGEMENT PLAN

Wharton Borough

Wharton Public Library (Block 1316, Lot 8)



HUC02030103030070

Water Quality, Water Quantity and Groundwater Recharge

The project involves the creation of a rain garden on the Borough Library property. The proposed project requires the re-routing of roof leaders to a rain garden. The rain garden would capture, filter and infiltrate rooftop runoff. The project is located along a sidewalk to the rear entrance of the library and offers an educational opportunity. Additional opportunities may include stormwater planters adjacent to the rear parking lot.

STORMWATER MANAGEMENT PLAN

Wharton Borough

Additional Potential Project Locations

The following is a list of other locations for mitigation projects. Details of these projects should be reviewed with the Borough Engineer.

1. Old Irondale Road - HUC HUC02030103030070 (*WQN,GWR*).
2. Deszo Street - HUC HUC02030103030070 (*WQN, GWR*).
3. Columbia Street Park - HUC HUC02030103030070 (*WQN,GWR*).
4. Burns Street (runoff to Morris Canal) - HUC HUC02030103030070 (*WQN,GWR*).
5. Hurd Street (runoff to Morris Canal) - HUC02030103030070 (*WQN,GWR*).
6. Oxford Road - HUC02030103030070 (*WQM*).
7. School Rear Parking Lot - HUC02030103030070 (*WQM*).
8. Municipal Parking Lot on North Main Street - HUC02030103030070 (*WQL*).
9. Municipal Building Parking Lot - HUC02030103030070 (*WQL*).
10. DPW Facility Parking Lot - HUC02030103030070 (*WQL*).

WQL= Water Quality, WQN= Water Quantity, GWR= Groundwater Recharge

General Types of Mitigation Projects

Repair Roadside Swales

Roadside swale repairs within the same HUC14 may be presented to the Borough Engineer for review and approval. Swale repair may include:

- a. Bioswales.
- b. Redesign of side slopes.
- c. Slope stability.
- d. Channel stabilization (rip rap).

Stormwater Basin Retrofit

Stormwater basin retrofit projects within the same HUC14 may be presented to the Borough Engineer for review and approval. Basin retrofit projects may include:

- a. Outlet structure modifications.
- b. Regrading and planting.
- c. Elimination of low flow channels.
- d. Installation of in-line or end-of-pipe Best Management Practices (BMP) as approved by NJDEP.

Stream and Stream Bank Stabilization

Stream and stream bank stabilization projects may be presented for review and approval by the Borough Engineer. Stabilization projects will be reviewed for the following benefits:

- a. Stabilization of eroded stream banks where public or private property or structures are threatened.
- b. Reduce sediment deposition in lakes, ponds and other low velocity areas.
- c. Improved water quality.

Stormwater Outfall Restoration

Projects identified for stormwater outfall repair/retrofits are prioritized by proximity to Washington Pond and need of repair. Mitigation of existing outfalls within the same HUC14 is under the guidance and prioritization of the Borough Engineer. Outfalls with substandard apron protection can lead to siltation and sedimentation of Washington Pond. Therefore, outfalls within the Washington Pond estimated drainage area are prioritized for repair/retrofit.

Outfall retrofits to control sedimentation revolve around reducing velocity of discharged water. This is most commonly accomplished through the installation of properly sized rip-rap. Areas for rip-rap around outfalls are typically between 10-20 square feet. Additional non-structural stormwater techniques around outfalls include regenerative step pool storm conveyance. This technique creates a series of pools to collect stormwater and allow time for sediment to dissipate before continuing down the channel to the eventual receiving waterbody. This technique is recommended if adequate space allows for the construction of a regenerative step pool storm conveyance.

Other restoration options at the discretion of the Borough Engineer are:

- a. Replacement of conduit outlet protection with evidence of scour/erosion.
 - b. Replacement with installation of drop manhole to set outfall structure at invert of stream channel with outlet protection.
2. If a suitable site cannot be located in the same drainage area as the proposed development, the mitigation project may provide mitigation that is not equivalent to the impacts for which the variance or exemption is sought, but that addresses the same issue.
 3. The Borough may allow a developer to provide funding or partial funding for an environmental enhancement project. 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.

Appendix A: Maps

STORMWATER MANAGEMENT PLAN

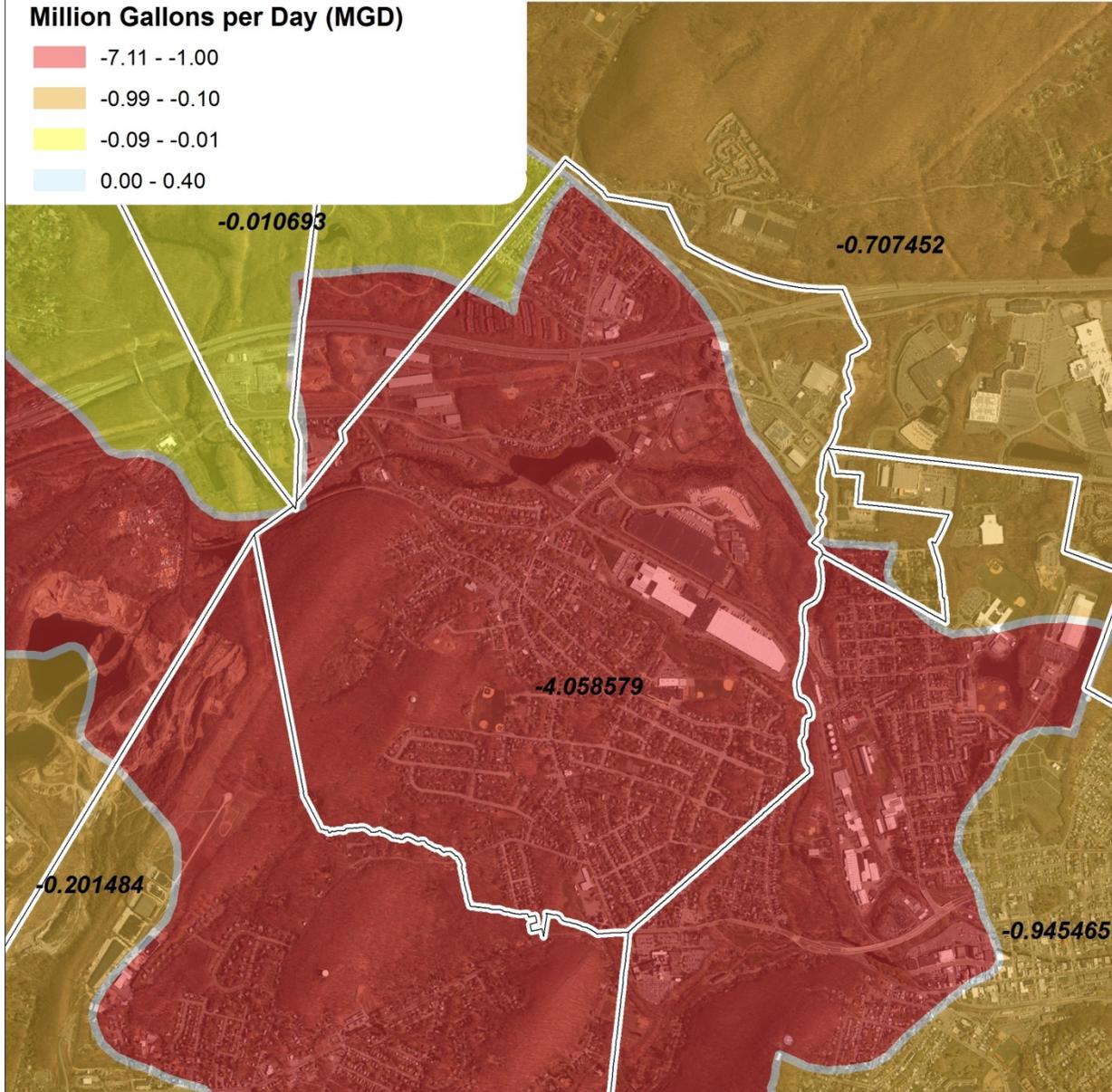
Wharton Borough

Net Water Availability



Million Gallons per Day (MGD)

- 7.11 - -1.00
- 0.99 - -0.10
- 0.09 - -0.01
- 0.00 - 0.40



Source: NJDEP, Highlands Council, Wharton Borough, Morris County



Wharton Borough
Morris County, New Jersey



1:24,000

STORMWATER MANAGEMENT PLAN

Wharton Borough

Carbonate Rock Areas



Geologic Name

-  Berkshire Valley & Poxono Island Formations
-  Hardyston Quartzite
-  Leithsville Formation



Source: NJDEP, Highlands Council, Wharton Borough, Morris County



Wharton Borough

Morris County, New Jersey



1:24,000

STORMWATER MANAGEMENT PLAN

Wharton Borough

Prime Groundwater Recharge Area



 Prime Groundwater Recharge Areas



Source: NJDEP, Highlands Council, Wharton Borough, Morris County



Wharton Borough
Morris County, New Jersey

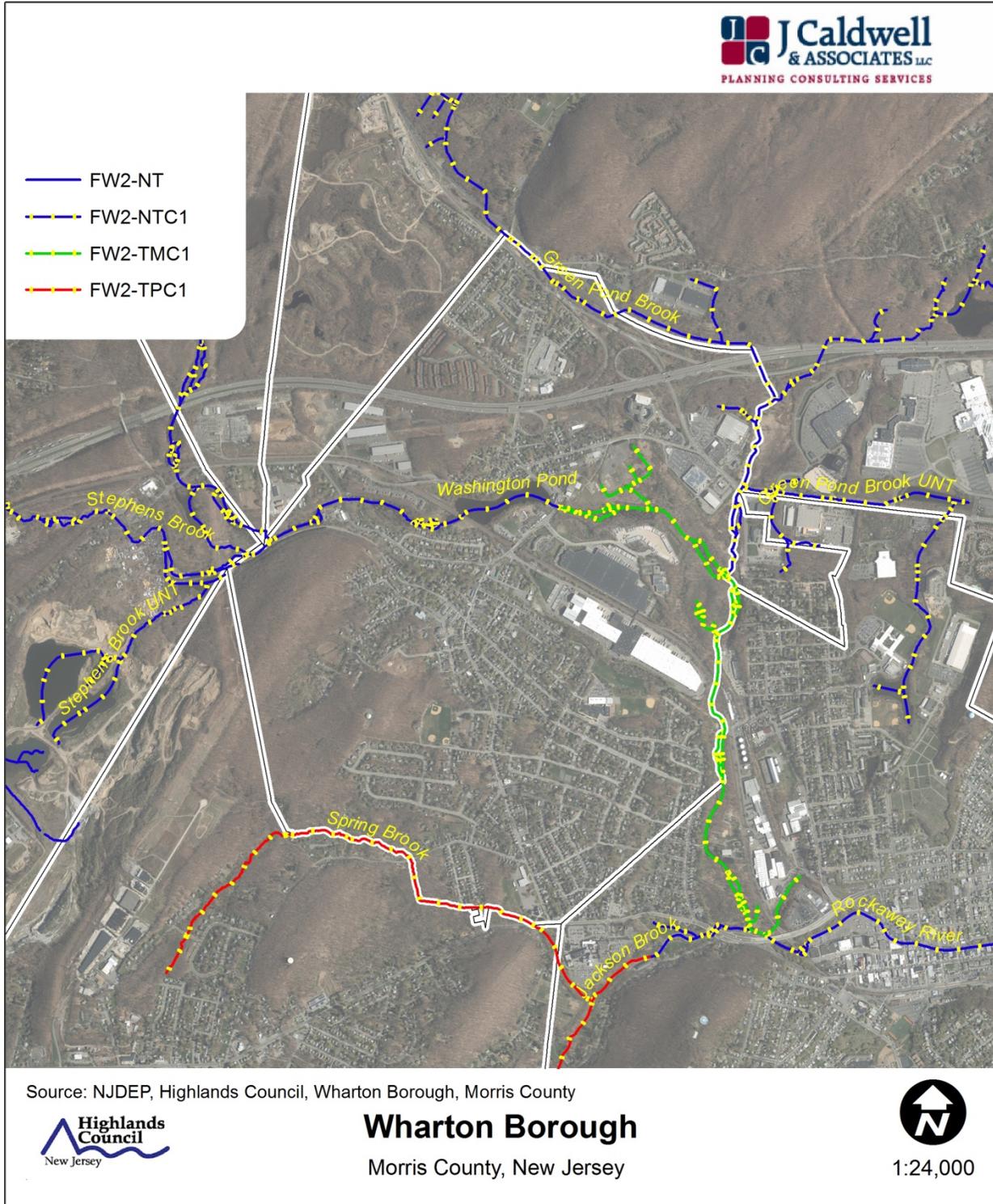


1:24,000

STORMWATER MANAGEMENT PLAN

Wharton Borough

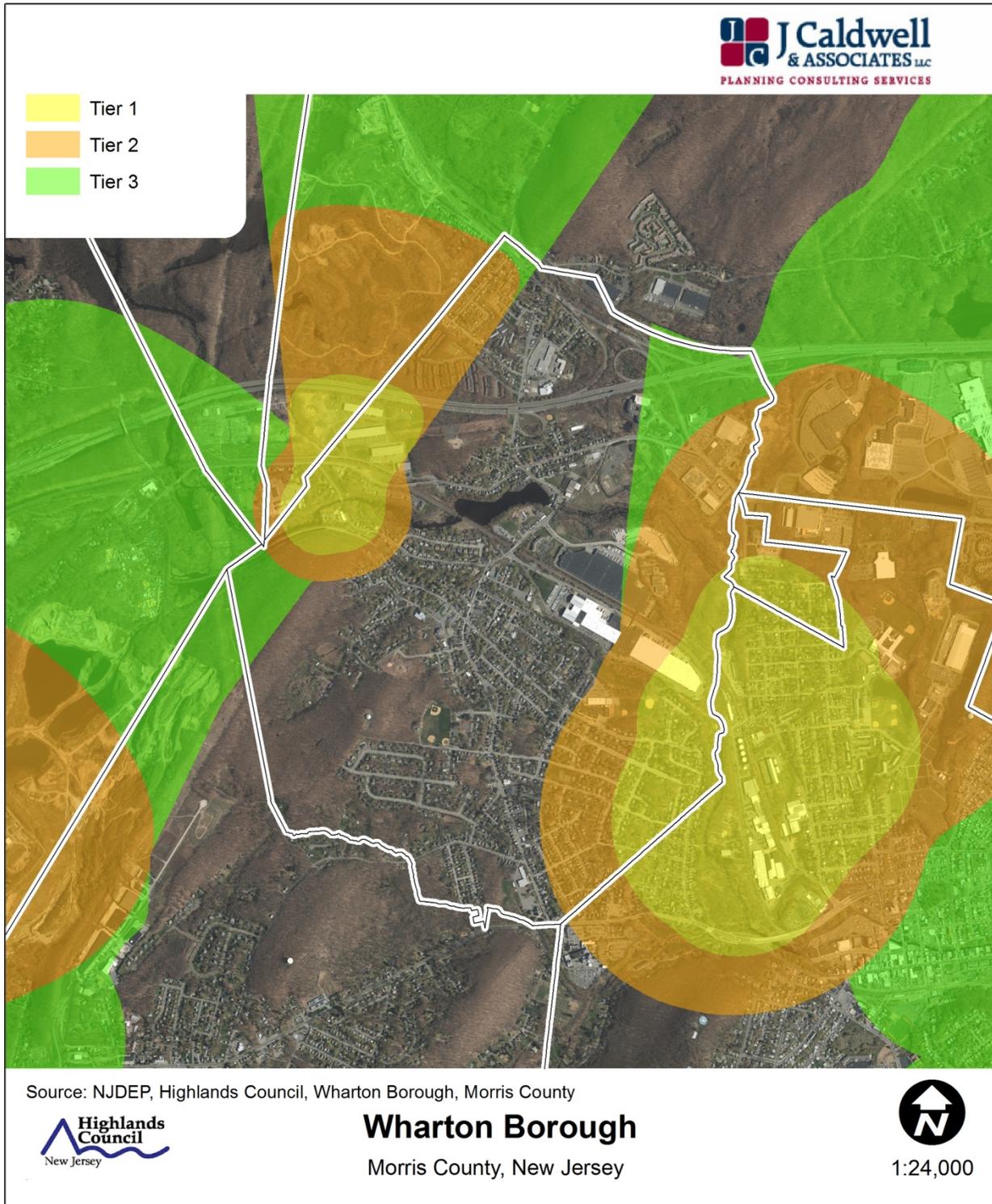
Waterways



STORMWATER MANAGEMENT PLAN

Wharton Borough

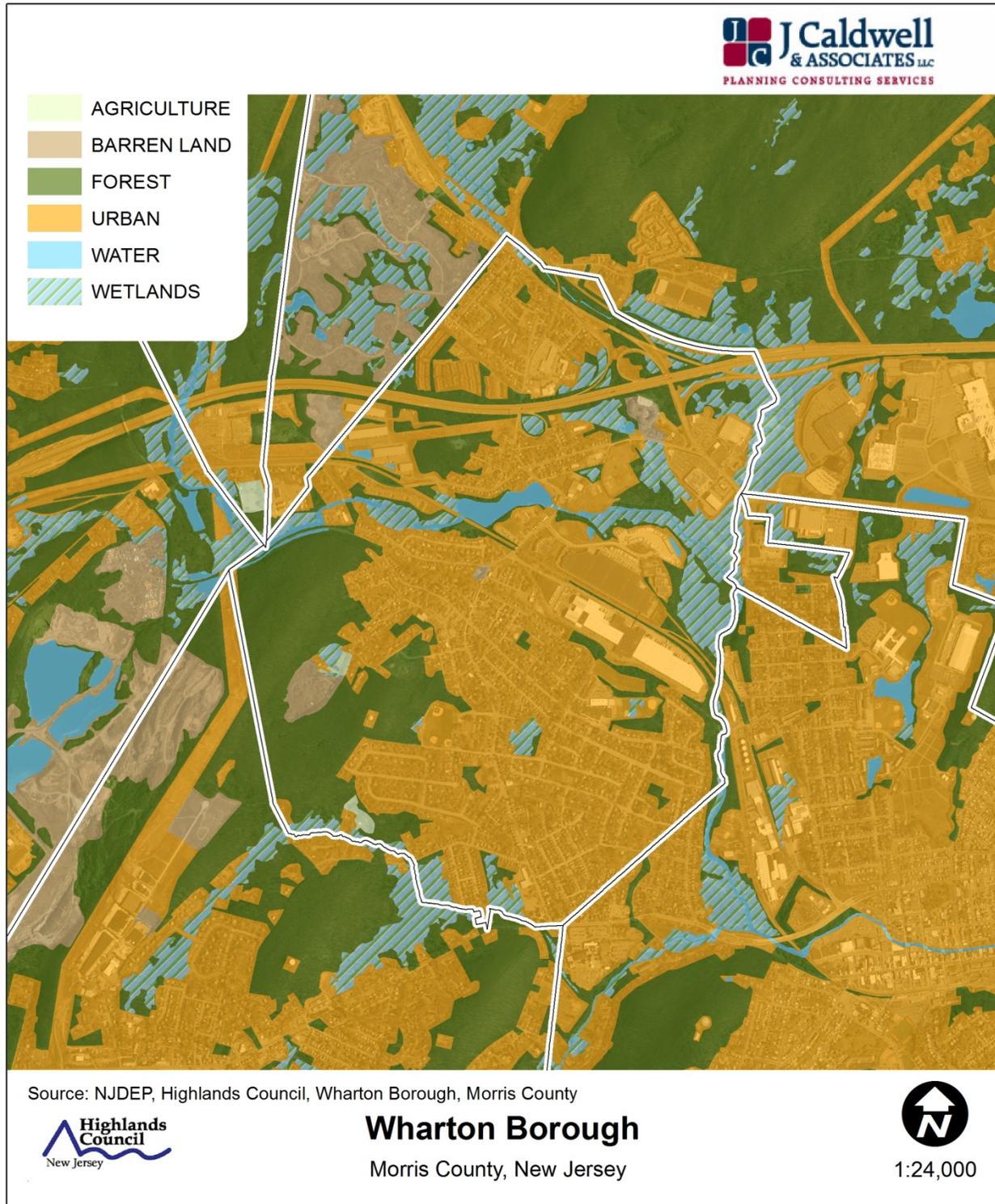
Wellhead Protection Areas



STORMWATER MANAGEMENT PLAN

Wharton Borough

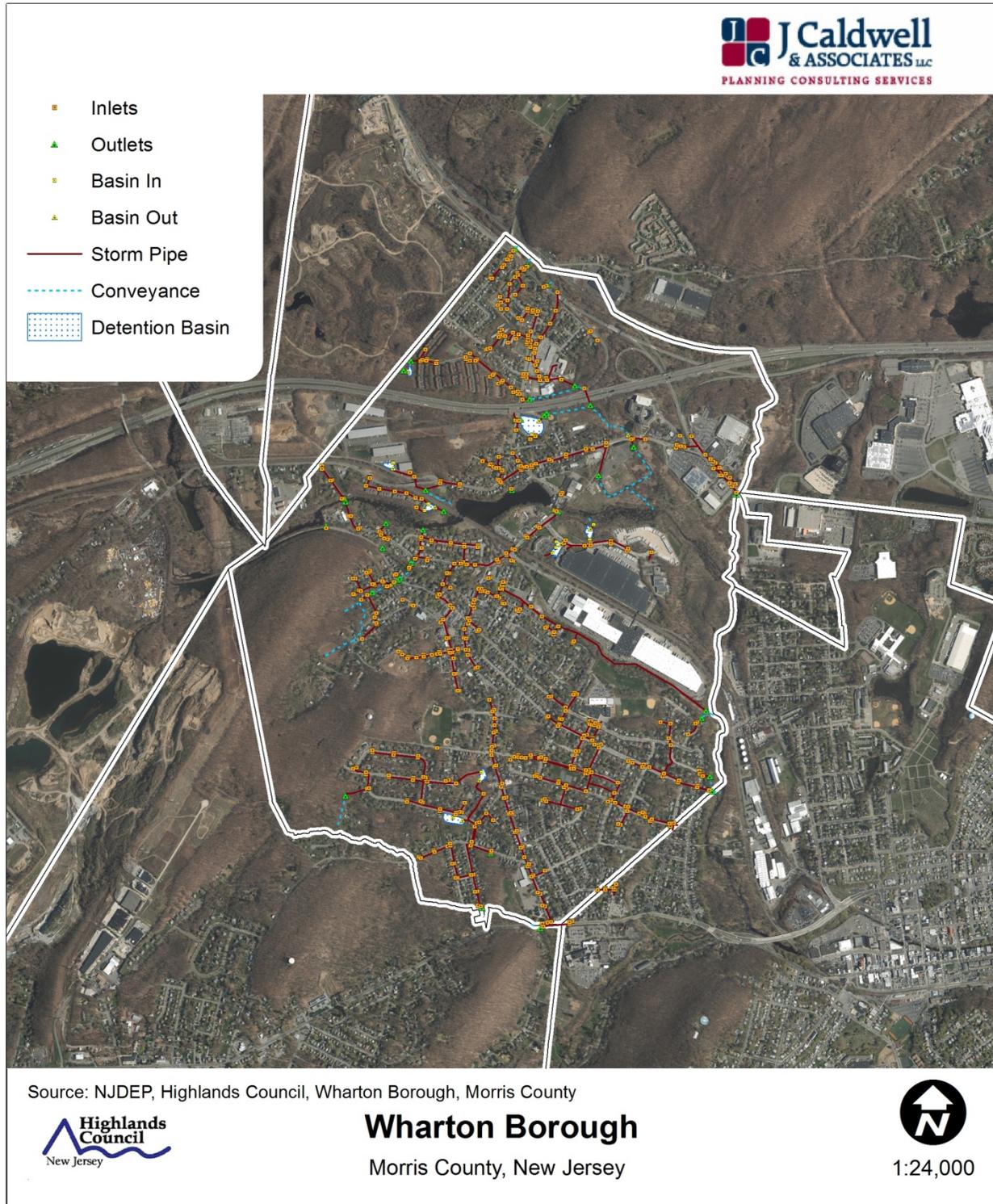
Land Use/Land Cover



STORMWATER MANAGEMENT PLAN

Wharton Borough

Stormwater Facilities



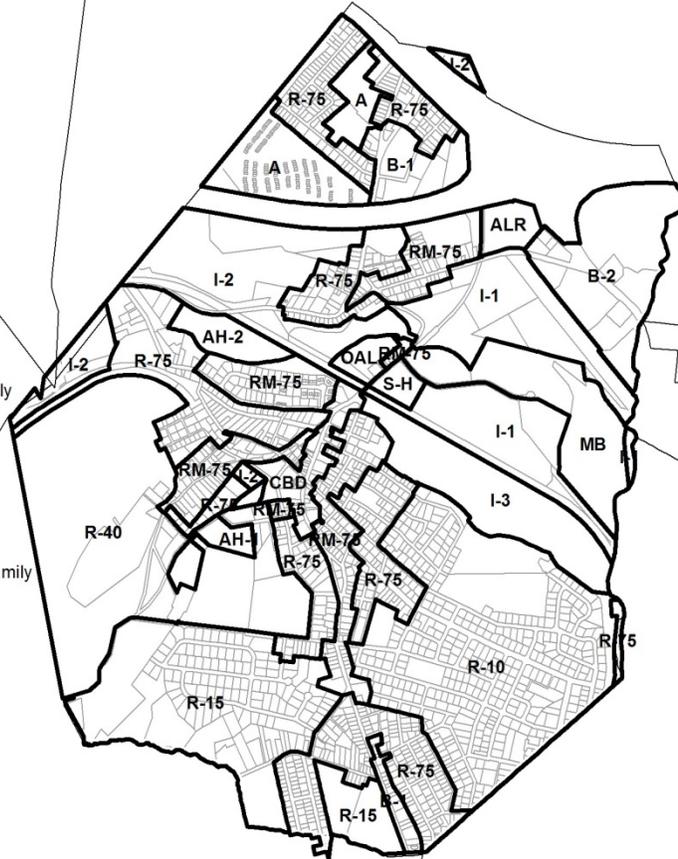
STORMWATER MANAGEMENT PLAN

Wharton Borough

Zoning



- A - Apartment and Townhouse
- AH-1 - Affordable Housing
- AH-2 - Affordable Housing
- ALR - Adult Living Residential
- B-1 - Neighborhood Business
- B-2 - Regional Business
- CBD - Central Business District
- I-1 - Planned Industrial
- I-2 - General Industrial
- I-3 - Industrial/Distribution
- MB - Mixed Business
- OAL - Office/Assisted Living
- R-10 - Low-Moderate Density Single Family
- R-15 - Low Density Single Family
- R-40 - Low Density Single Family
- R-75 - Moderate Density Single Family
- RM-75 - Medium Density One and Two Family
- S-H - Senior Housing



Source: NJDEP, Highlands Council, Wharton Borough, Morris County



Wharton Borough
Morris County, New Jersey



1:24,000