

HABITAT SUITABILITY DETERMINATION REPORT N.J.A.C. 7:15-5.26

BLOCK 578 * LOT 19

**CITY OF MILLVILLE,
CUMBERLAND COUNTY, NEW JERSEY**

PREPARED FOR:

**Durand Glass Manufacturing Company
901 South Wade Boulevard
Millville, NJ 08332**

**SEPTEMBER 2011
JOB NUMBER: T1777.001**



**TRIDENT ENVIRONMENTAL
CONSULTANTS**

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T1777.001
September 21, 2011

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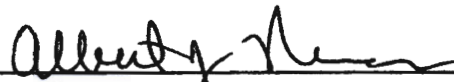
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Cumberland County, New Jersey

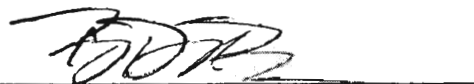
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I. INTRODUCTION

This threatened/endangered species habitat suitability assessment has been prepared for the New Jersey Department of Environmental Protection (NJDEP) in reviewing a Habitat Suitability Determination on the site as per the requirements listed at *N.J.A.C. 7:15-5.26*. The NJDEP Division of Watershed Management requires a Habitat Suitability Determination (HSD) to be conducted on sites that NJDEP is recommending to be removed from sewer service areas (SSA) based on Landscape Project Version 2.1 mapping. The Landscape Project was adopted in 1994, and utilizes Geographic Information Systems (GIS) technology for the overall goal of protecting threatened/endangered species habitat.

Trident Environmental Consultants (TEC) reviewed the June 30, 2011 correspondence from Mr. Bill Purdie, NJDEP Office of Land Use Planning Supervisor (Refer to Appendix A for a copy of the referenced correspondence). This letter states that a Habitat Suitability Determination for the following threatened/endangered species must be submitted for consideration of the site to be included in the City of Millville's Sewage Treatment Plant sewer service area: Barred Owl (*Strix varia*); Cope's Gray Treefrog (*Hyla chrysoscelis*); Corn Snake (*Elaphe g. guttata*); Northern Pine Snake (*Pituophis m. melanoleucus*); and Red-headed Woodpecker (*Melanerpes erythrocephalus*).

TEC also reviewed email correspondence from Mr. Bill Purdie sent September 14, 2011 to Michael A. Smith. In summary, this email states notes no wetlands have been identified on-site and there is no suitable habitat for Cope's Gray Treefrog; additional information is needed for NJDEP to make a determination on Red-headed Woodpecker, Barred Owl, and Corn Snake; and NJDEP advises that there are two occurrence records for Northern Pine Snake "off Rt. 55 directly adjacent to this site as well as along the northern border."

II. SITE LOCATION

The subject site is located along the east side of State Route 55 Freeway within the City of Millville, Cumberland County, New Jersey (Refer to *Figure 1. Road Map* and *Figure 2. Aerial Map*). The site also borders the Winchester & Western Railroad Company (Millville Branch) along the southwest boundary for approximately seven hundred ninety five (795) feet. Improved Gorton Road lies immediately adjacent to the railroad. The parcel is irregular in shape and consists of 79.75 acres, according to tax mapping.

Land use within one-quarter (1/4) mile of the site consists of industrial development; single-family residences; and vacant woodlands. Menantico Ponds Wildlife Management Area borders the subject property along the southwest boundary. Property also owned by The State of New Jersey borders the subject property on the eastern and northern boundaries.

The site is found on the U.S.G.S. Millville and Dividing Creek quadrangles with NAD 1983 State plane coordinates of E (x) – 349256, N (y) – 198584, at the approximate center of the site (Refer to *Figure 3. U.S.G.S. Quadrangle Map*).

The site is located within the Maurice, Salem, and Cohansey Watershed Management Area (WMA17), and within the Menantico Creek and Maurice River (Menantico Creek to Union Lake) watersheds.

The site is located within the State Development and Redevelopment Plan's (SDRP) Suburban Planning Area (PA2) (See *Figure 4. State Planning Area Map*).

III. MAPPED ON-SITE SOILS

According to the Geographic Information System data layer entitled "Soil Survey Geographic 2005 (SSURGO) Database for Cumberland County, New Jersey", originated by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), published by the NJDEP/NRCS, the property is underlain by three (3) soil types derived from two (2) soil series (See *Figure 5. Soil Survey Map*).

These soil types and corresponding map unit symbols are Lakewood sand (LasB) and Evesboro sand (EveB, EveC).

There were no important soil features identified present on or within 0.25 miles of the subject site.

The following soil descriptions have been referenced directly from the USDA, NRCS, Soil Data Mart (<http://soildatamart.nrcs.usda.gov/Default.aspx>). Supporting documentation on the characteristics of on-site soils was referenced from the publication, "Soil Survey of Cumberland County", prepared by the USDA Soil Conservation Service.

Evesboro Sand (EveB), 0 to 5% Slopes

This is a gently sloping, excessively drained soil on divides. Areas of soil are irregular in shape and typically range from twenty-five (25) to one hundred (100) acres in size.

Typically, the surface layer is four (4) inches thick. In the uppermost two (2) inches it is matted, decomposed, organic matter and roots. Below that, it is grayish brown sand. The subsurface layer is yellowish brown sand about five (5) inches thick. The subsoil is yellowish brown sand about twenty-five (25) inches thick. The substratum is yellowish brown sand to a depth of sixty inches or more.

The permeability of this soil is rapid in the subsoil and the substratum. The available water capacity is low. The seasonal high water table is at a depth of

more than six (6) feet. Runoff is very slow and water erosion is a slight hazard. Wind erosion is a severe hazard. Organic matter content is low. In unlimed areas reaction is strongly acidic to extremely acidic.

The soil is poorly suited for common field crops, hay, vegetative, positive, and commercial woodland production.

Evesboro Sand (EveC), 5 to 10% Slopes

This is a moderately sloping, excessively drained soil on side slopes. Areas of soil are irregular in shape and typically range from ten (10) to fifty (50) acres in size.

Typically, the surface layer is four (4) inches thick. In the uppermost two (2) inches it is matted, decomposed, organic matter and roots. Below that, it is grayish brown sand. The subsurface layer is yellowish brown sand about five (5) inches thick. The subsoil is yellowish brown sand about twenty-five (25) inches thick. The substratum is yellowish brown sand to a depth of sixty inches or more.

The permeability of this soil is rapid in the subsoil and the substratum. The available water capacity is low. The seasonal high water table is at a depth of more than six (6) feet. Runoff is slow and water erosion is a moderate hazard. Wind erosion is a severe hazard. Organic matter content is low. In unlimed areas reaction is strongly acidic and extremely acidic.

The soil is poorly suited for common field crops, hay, vegetative, positive, and commercial woodland production.

Lakewood Sand (LasB), 0 to 5 % Slopes

This is a nearly level and gently sloping, excessively drained soil on divides. Areas of the soil are irregular in shape and typically range from five (5) to forty (40) acres in size.

Typically, the surface layer is four (4) inches thick. The uppermost inch is a dark brown, matted, decomposed organic material, and below that, it is dark grayish brown sand. The subsurface layer is light brownish gray sand ten (10) inches thick. The subsoil is seventeen (17) inches thick. It is dark brown loamy sand to a depth of sixteen (16) inches. Below that, it is brownish yellow sand to a depth of thirty-one (31) inches. The substratum is brownish yellow gravelly sand to a depth of sixty (60) inches or more.

Permeability of this soil is rapid in the subsoil and moderate to rapid in the substratum. The available water capacity is low. The seasonal high water table

is at a depth of more than six (6) feet. Runoff is very slow. Water erosion is a slight hazard. Wind erosion is a severe hazard. Organic matter content is low.

Common trees are pitch pine, shortleaf pine, chestnut oak, black oak, and Virginia pine.

Table 1. Characteristics of mapped on-site soils.

<u>Soil Type</u>	<u>Soil Texture</u>	<u>Acidity (pH)</u> <u>0-20"</u>	<u>High Water Table (Ft.)</u>
Evesboro sand (EveB, EveC)	Sand; loamy sand; gravelly loamy sand	3.6-5.0	Unavailable (feature not a concern or data not estimated)
Lakewood sand (LasB)	Sand; loamy sand; gravelly sand; gravelly loamy sand	3.6-5.0	Unavailable (feature not a concern or data not estimated)

IV. ON-SITE VEGETATION

Upland pine-oak woodlands are the dominant vegetation community present on the subject property and are reminiscent of a Pine Barrens community (Refer to *Figure 6. Wetlands Map* and *Figure 7. Vegetation Communities Map*). The tree canopy is mostly open and almost entirely a pine/oak composition or, in some small areas, oak/pine (Refer to Appendix B for Site Photographs). Overstory tree species are primarily pitch pine (*Pinus rigida*) and Virginia pine (*Pinus virginiana*) but also includes white oak (*Quercus alba*) and scarlet oak (*Q. coccinea*). The understory contains black oak (*Q. velutina*), post oak (*Q. stellata*), blackjack oak (*Q. marilandica*), and sassafras (*Sassafras albidum*) along with overstory species. The sparse shrub layer is composed of low blueberry (*Vaccinium vacillans*) and huckleberry (*Gaylussaccia* spp.) wherever present. Herbaceous vegetation noted includes Pennsylvania sedge (*Carex pensylvanica*), frostweed (*Helianthemum canadense*), heather (*Hudsonia* spp.), Gray's cyperus (*Cyperus grayii*), pinweed (*Lechea* sp.), buttonweed (*Diodia teres*), little bluestem (*Schizicharium scoparium*), and bracken fern (*Pteridium aquilinum*).

Individual ecological communities identified on the site have been classified in accordance with Classification of Vegetation Communities of New Jersey: Second Iteration, by Breden et al. As required at N.J.A.C. 7:15-5.26 (b)3vi, each community evaluation included physiognomy, species composition with percent by strata, description of successional stage, slope degrees and aspect and hydrologic influences. The soil texture, pH, and depth to water table have been described above within Table 1. According to the GIS geology data layer, the site is underlain by the Cohansey formation (Refer to *Figure 8. Bedrock Geology Map*).

This classification system incorporates physiognomic and floristic levels. The physiognomic level has six parts: system; class; subclass; group; subgroup; and formation. The floristic level has two parts: alliance; and plant association. The project site is located in the Inner Coastal Plain (Subsection 232Ac).

A. Pine-oak Upland Woods

Coniferous-dominated wooded uplands are found on-site. Based upon the above-referenced classification system, it has been determined that the woodlands are interspersed with several classification types:

I.C.3.N.a MIXED NEEDLE-LEAVED EVERGREEN-COLD-DECIDUOUS FOREST

System -	Terrestrial
Class -	Forest
Subclass -	Mixed evergreen-deciduous
Group -	Mixed needle-leaved evergreen cold-deciduous forest
Subgroup -	Natural/Semi-natural
Formation -	Rounded-crowned temperate mixed needle-leaved evergreen cold-deciduous woodland
Alliance -	I.C.3.N.a.35 <i>Pinus rigida</i> - <i>Quercus coccinea</i> Forest Alliance
Association -	<i>Pinus</i> (<i>rigida</i> , <i>echinata</i>) – <i>Quercus coccinea</i> / <i>Ilex opaca</i> Forest

System -	Terrestrial
Class -	Forest
Subclass -	Mixed evergreen-deciduous
Group -	Mixed needle-leaved evergreen cold-deciduous forest
Subgroup -	Natural/Semi-natural
Formation -	Rounded-crowned temperate mixed needle-leaved evergreen cold-deciduous woodland
Alliance -	I.C.3.N.a.27 <i>Pinus virginiana</i> - <i>Quercus</i> (<i>alba</i> , <i>stellata</i> , <i>falcata</i> , <i>velutina</i>) Forest Alliance
Association -	<i>Pinus virginiana</i> - <i>Quercus</i> (<i>alba</i> , <i>stellata</i> , <i>falcata</i> , <i>velutina</i>)

II.A.4.N.a ROUNDED-CROWNED TEMPERATE OR SUBPOLAR NEEDLE-LEAVED EVERGREEN WOODLAND

System -	Terrestrial
Class -	Woodland
Subclass -	Evergreen
Group -	Mixed needle-leaved evergreen cold-deciduous woodland
Subgroup -	Natural/Semi-natural
Formation -	Rounded-crowned temperate needle-leaved evergreen woodland

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Alliance -	II.A.4.N.a.26 Pinus rigida Woodland Alliance
Association -	Pinus rigida / Quercus (marilandica, ilicifolia) / Pyxidanthera barbulata Woodland

Table 2. Vegetation On-site.

<u>Canopy/Subcanopy</u>	
<u>Common Name</u>	<u>Scientific Name</u>
White oak	<i>Quercus alba</i>
Pitch pine	<i>Pinus rigida</i>
Scarlet oak	<i>Quercus coccinea</i>
Black oak	<i>Quercus velutina</i>
Virginia pine	<i>Pinus virginiana</i>
<u>Understory</u>	
<u>Common Name</u>	<u>Scientific Name</u>
Sassafras	<i>Sassafras albidum</i>
Black oak	<i>Quercus velutina</i>
White oak	<i>Quercus alba</i>
Pitch pine	<i>Pinus rigida</i>
Virginia pine	<i>Pinus virginiana</i>
Post oak	<i>Quercus prinus</i>
Blackjack oak	<i>Quercus marilandica</i>
<u>Shrub Layer</u>	
<u>Common Name</u>	<u>Scientific Name</u>
Low blueberry	<i>Vaccinium vacillans</i>
Huckleberry	<i>Gaylussacia</i> spp.
<u>Herbaceous/Vine</u>	
<u>Common Name</u>	<u>Scientific Name</u>
Pennsylvanica sedge	<i>Carex pensylvanica</i>
Frostweed	<i>Helianthemum canadense</i>
Pinweed	<i>Lechea</i> spp.
Heather	<i>Hudsonia</i> spp.
Buttonweed	<i>Diodia teres</i>
Gray's cyperus	<i>Cyperus grayii</i>
Little bluestem	<i>Schizicharium scoparium</i>
A pin cushion moss	<i>Leucobryum albidum</i>

V. ON-SITE GEOLOGY

According to the Geographic Information System data layer entitled "Bedrock Geology for New Jersey", provided by the New Jersey Department of Environmental Protection New Jersey Geological Survey, the site is underlain by the Cohansey Formation (Refer to *Figure 8. Bedrock Geology Map*). Lithology for the Cohansey formation is clay at the base with fine to medium-grained quartz sand at the top of the formation.

According to the Geographic Information System data layer entitled "Surficial Geology for New Jersey", provided by the New Jersey Department of Environmental Protection New Jersey Geological Survey, the surficial geology underlying the site is the Cape May Formation Unit 1 (Qcm1) and Weathered Coastal Plain Formations (Qwcp) (Refer to *Figure 9. Surficial Geology Map*).

Lithology for the Cape May Formation Unit 1 is sand, minor silt, clay, and pebble gravel; very pale brown, yellow, and reddish yellow; and as much as fifty feet thick. It forms a marine terrace with a surface altitude of up to seventy five feet. It is partly equivalent to Cape May formation unit 3 of Newell and others. The geologic age may date to the early-middle Pleistocene.

Lithology for the Weathered Coastal Plain Formations is exposed sand and clay of Coastal Plain bedrock formations. It includes thin, patchy alluvium and colluvium, and pebbles remaining from erosion of surficial deposits. Its geologic age dates chiefly to the Pleistocene, and locally to the Miocene and Pliocene.

There were no important geologic features, such as talus or caves, identified on or within 0.25 miles of the site.

VI. TOPOGRAPHY AND DRAINAGE

The topography on the site ranges from nearly level to moderately sloping in varying areas throughout the site.

The site is located within the Maurice, Salem, and Cohansey Watershed Management Area (WMA17), and within the Maurice River (Menantico Creek to Union Lake) and Menantico Creek watersheds.

The northwestern majority of the subject property falls within the Maurice River (Menantico Creek to Union Lake) sub-watershed (HUC14-02040206170030). The southeastern remainder of the site is located within the Menantico Creek (below Rt. 552) sub-watershed (HUC14-02040206180050).

There were no important topographic features identified on or within 0.25 miles of the site (Refer to *Figure 9. 0.25 Mile Site Radius Map*).

VII. HYDROLOGY & FRESHWATER WETLANDS

The site is located within the Maurice, Salem, and Cohansey Watershed Management Area (WMA17). The northwestern portion of the site is within the Maurice River (Menantico Creek to Union Lake) watershed and sub-watershed. The southeastern remainder of the site lies within the Menantico Creek (below Rt. 552) sub-watershed and the Menantico Creek watershed. All hydrologic features on and within 0.25 miles of the site were evaluated.

TEC reviewed the GIS data layer for NJDEP-mapped freshwater wetlands (Refer to *Figure 6. NJDEP Freshwater Wetlands Map*). There are no freshwater wetlands mapped on the site. The nearest NJDEP-mapped freshwater wetland is located approximately eight hundred eighty five (885) feet to the east of the site, at the closest point.

TEC also reviewed the Rutgers University database for remote sensing and spatial analysis (dbrssa) which maps vernal pool habitats and categorizes them into four (4) categories: certified, not surveyed, yes/vernal pool, and not vernal. There are no vernal pool mappings located on the subject property. However, there is a 'not surveyed' feature mapped roughly two hundred seventy (270) feet north of the site, at the nearest point (Refer to *Figure 6*).

There are no freshwater wetlands, water courses, water bodies or vernal pools located on-site (Refer to *Figure 9. 0.25 Mile Site Radius Map*).

VIII. THREATENED/ENDANGERED SPECIES

The basis of the Habitat Suitability Determination is assessing for accuracy the areas mapped as potential threatened/endangered species habitat by the NJDEP's Landscape Project (*Version 2.1*). A Landscape Project habitat patch of Rank 3, 4, or 5 is considered suitable threatened/endangered species habitat until proven otherwise.

A. Landscape Project Review

Habitat Type Layers

TEC reviewed the Landscape Project (*Version 2.1*) data layers provided by the NJDEP Division of Fish and Wildlife, Endangered and Nongame Species Program. The Landscape Maps show delineated "patches" of contiguous habitat types. The five (5) generalized habitat types are Forest, Forested Wetland, Emergent, Grassland and Beach/Dune. The Landscape habitat patches are ranked according to the level of regulatory protection assigned to the wildlife species with locational data intersecting the patch. The ranking system applied is as follows:

Rank 1: There are no documented sightings intersecting the patch but the patch meets minimum size criteria and/or contains features favorable to threatened/endangered or priority (special concern) species.

Rank 2: The patch intersects one or more occurrences of at least one State classified species of special concern. It should be noted that species of special concern (priority) do not carry any formal regulatory protection.

Rank 3: One or more occurrences of at least one State threatened species intersects the habitat patch.

Rank 4: The patch intersects one or more occurrences of at least one State endangered species.

Rank 5: One or more occurrences of at least one federally listed species, whether it is classified as threatened or endangered, intersect the habitat patch.

Note: The Metadata and Species Lookup tables have been updated as of May 19, 2008

Rank 4 Forest habitat (patch link F2279) mapped on-site lists Barred Owl, Cope's Gray Treefrog, Corn Snake, Northern Pine Snake, and Red-headed Woodpecker (Refer to *Figure 11. Landscape Project Map*). This Forest patch that encroaches onto the site is a total of approximately 3,461 acres.

B. Subject Species Descriptions

General descriptions of suitable habitats for the five (5) threatened/endangered wildlife species subject of this Habitat Suitability Determination are presented below.

Barred Owl (*Strix varia*), State Threatened

Barred Owls are forest dwellers which rarely stray from forested swamps, or other mature old growth woodlands. Nesting habitat for this species requires extensive contiguous forests containing large, mature trees and snags for suitable cavity nests. Tree specimens with a DBH of twenty (20) inches or greater are considered to be indicative of suitable nesting habitat. Nest sites are usually at a minimum of twenty-five (25) feet above the ground and may be a cavity, broken tree top, crotch of a tree, or an abandoned raptor, crow or squirrel nest. Foraging usually occurs in and along open areas where prey can be easily seen, but because of the ability to pounce on prey rather than swoop,

them. During the months of June and early July, gravid female Pine Snakes find sunny open areas where they proceed to dig roughly meter-long horizontal tunnels ending in a chamber. The female lays three (3) to sixteen (16) eggs in this chamber and then leaves the nest. During early fall, Pine Snakes may follow scent trails back to their original overwintering sites or seek out another suitable hibernacula. Cold weather in mid October or early November will promote the descent of the snakes into the hibernacula, where they will remain until spring emergence.

Red-headed Woodpecker (*Melanerpes erythrocephalus*), State Threatened

Red-headed Woodpeckers prefer mature, open grove-like woodlands containing mast producing trees, with little to no understory and shrub layer vegetation. Examples include grazing or farming areas containing large, isolated oaks, hickories and pines; isolated trees remaining in clear-cut areas; suburban woodlots; parks; cemeteries; and golf course groves. Swamps with an abundance of snags may also harbor breeding Red-headed Woodpeckers. Nests are typically excavated by the male but may be done by both sexes, usually in the trunk or limb of a dead tree. Live trees with dead portions, as well as utility poles, have also been reported. Nests range from six (6) to seventy-five (75) feet above the ground. Spring migration usually occurs from late April into May and fall migration typically extends from mid-September to mid-October.

IX. RESULTS OF HABITAT ASSESSMENT

TEC has performed a threatened/endangered species habitat suitability assessment of the above-referenced site. This evaluation has been conducted in accordance with the standards set in 7:15 – 5.26, Endangered and Threatened Species Policy. The methodology used by TEC representatives for the habitat suitability assessment was the technique/survey methodology outlined in the *Protocols for the Establishment of Exceptional Resource Value Wetlands Pursuant to the Freshwater Wetlands Protection Act (N.J.S.A. 13:9B-1 Et Seq.) Based on Documentation of State or Federal Endangered or Threatened Species*, last updated May 2008, as prepared by The NJDEP's Land Use Regulation Program, Office of Natural Lands Management, Division of Parks & Forestry and The Endangered and Nongame Species Program Division of Fish, Game & Wildlife.

Experience of TEC biologists and various scientific literature were also utilized to aid in assessing habitat suitability for the subject threatened/endangered wildlife species.

A. Barred Owl

There is an absence of mature forest habitat on and surrounding the site. The pine-oak community present throughout the site does not contain any mature hardwood trees that could provide a suitable nest cavity. Although the site is part

Barred Owls are able to forage in dense Pine Barrens habitats. During the breeding season (typically early March through April), this species is highly territorial to intraspecific competitors.

Cope's Gray Treefrog (*Hyla chrysoscelis*), State Endangered

Southern (Cope's) Gray Treefrogs prefer forested and scrub-shrub wetland habitats where trees and shrubs grow in or near permanent water. Breeding occurs in vernal pools, swamps, and backwaters of slowly moving streams. Roadside ditches and puddles have also been reported. Following the breeding season, they remain in adjacent upland habitat. Following the breeding season, Cope's Gray treefrog remain in terrestrial habitat. Radio telemetry has demonstrated that Cope's Gray treefrogs in New Jersey are capable of long distance movements away from breeding pools following the breeding season. Following breeding, adults move to adjacent terrestrial habitats. Winter retreats include rotten stumps and logs, underground burrows, and cavities beneath the loose bark of trees.

Corn Snake (*Elaphe g. guttata*), State Endangered

This is a highly fossorial species and is known to prefer a variety of habitats such as overgrown fields, forest openings, classic Pine Barrens habitat, barn yards, woodlots, rocky hillsides, meadowland, along watercourses, and around springs. Corn snakes are also good climbers and can be found in trees and bushes. Hollow railroad ties are a favorite hiding place because they offer good ground cover, warmth from the sun, and protection from predators. Mating occurs from March to May. Eggs are laid from late May to July and hatch during July to September. Nests may be in rotting stumps, leaf litter, or other similar environments and are abandoned following egg-laying. In New Jersey, the Corn Snake may hibernate in communal dens with Pine Snakes and Black Racers, or alone in non-communal dens. Emergence from hibernation occurs in late March or early April, but corn snakes have been seen basking on the surface during winter warm spells in January, February, and March.

Northern Pine Snake (*Pituophis m. melanoleucus*), State Threatened

Northern Pine Snakes are a fossorial species limited to sandy soil habitats of the New Jersey Pine Barrens. Sandy, infertile soil provides areas with limited vegetation and is a necessary medium for potential nesting sites. Dry, sandy, pine-oak to oak-pine woodlands with open canopy areas are indicative of potential foraging habitat for the species. In mid spring, usually April in New Jersey, Pine Snakes begin emerging from their hibernacula. Dens may be dug at the bases of old decaying stumps, in abandoned mammal burrows, or other suitable refuge. Later in the spring and even into early summer, males may actively seek out females laying pheromone trails and attempt to mate with

of a larger contiguous forest, the site immediately borders Route 55 Freeway for approximately 2,300 feet and adjacent woods also lack mature deciduous stands. In addition the nearest forested wetland is mapped nearly 900 feet from the site, and aerial and wetland mapping review indicates that this wetland area is not mature wetland forest that could possibly contain Barred Owl.

Due to the absence of suitable forest habitat on and adjacent to the site where mature hardwoods could possibly provide a suitable nest cavity, Barred Owl habitat is not present on the site. Although the subject property could be utilized for roosting and foraging because it is wooded, there are several reasons why the site is not a critical habitat component for any local population: 1) the absence of extensive, mature wetland forest within one-quarter ($\frac{1}{4}$) mile; 2) the juxtaposition to existing development and consequently anthropogenic disturbance including State Route 55 Freeway; and 3) the site lies on the extreme periphery of the surrounding contiguous forest to the east.

B. Cope's Gray Treefrog

There is an absence of breeding habitat located on the subject property. There are no freshwater wetlands present on or immediately adjacent to the site. The nearest freshwater wetland is located approximately 885 feet to the east, at the closest point.

Cope's Gray Treefrog may also utilize temporary ponds or other similar features to breed so TEC checked the Rutgers University database for remote sensing and spatial analysis (dbcrrsa) which maps vernal pool habitats and categorizes them into four (4) categories: certified, not surveyed, yes/vernal pool, and not vernal. There are no vernal pool mappings located on the subject property; however a 'not surveyed' is mapped roughly three hundred (300) feet north of the site (Refer to *Figure 6*). This area of this off-site feature was investigated by TEC and no potential breeding habitat for Cope's Gray Treefrog was found.

Cope's Gray Treefrog habitat is not present on the subject property due to the absence of suitable breeding on and immediately surrounding the site.

C. Corn Snake

The soils and vegetation present are suitable for Corn Snake. Evesboro and Lakewood sands are mapped on the site and the vegetation community structure and composition is indicative of that favored by Corn Snake.

Pine stump holes are present on-site to possibly provide a summer den, nest site or hibernacula. There are rotten logs present on-site and railroad ties present along the immediately adjacent railroad line that could possibly provide nesting habitat.

However, Corn Snakes are known to inhabit locations where there is a water source such as a stream or pond, and the home range of a marked Corn Snake in Ocean County encompassed 11.3 acres (Ligouri 2003). There is an absence of such a water source on and within one-quarter (1/4) mile of the site. The Menantico Ponds are located, at the closest point, approximately one-quarter (1/4) mile to the east-southeast of the site and known home range acreage is found off-site near this water source. Furthermore, the email correspondence dated September 14, 2011 from Mr. Bill Purdie, NJDEP Office of Land Use Planning, supports this conclusion as it is generally indicated that the current occurrence records for this species are not in close proximity to the site.

D. Northern Pine Snake

The soils and vegetation present are suitable for Northern Pine Snake. Evesboro and Lakewood sands are mapped on the site and the vegetation community structure and composition is indicative of that favored by Northern Pine Snake.

Pine stump holes are present on-site to possibly provide a summer den. There are a couple locations of piled railroad ties present along the immediately adjacent railroad line where there is southerly facing exposure that could possibly provide hibernacula. However, the presence of hibernacula here may be unlikely as this area lies on the extreme periphery of the contiguous potential habitat, coupled with the close proximity to improved Gorton Road and existing development.

Nesting habitat appears to be a limiting factor for Northern Pine Snakes to utilize the site for breeding. Although there are sandy openings present on-site, they are relatively small and favorable areas do not receive significant sun exposure. There is a larger area of open sand immediately along Route 55 but the soils in this area are more compact. This area and the linear disturbance extending northeastward from this area where bare sand is present, which is an existing storm sewer, are evidenced with all terrain vehicle (ATV) usage.

However, the email correspondence from Mr. Bill Purdie, NJDEP Office of Land Use Planning, indicates there are two occurrence records for Northern Pine Snake "off Rt. 55 directly adjacent to this site as well as along the northern border."

E. Red-headed Woodpecker

The pine-dominated Pine Barrens vegetation community present on the site does not provide nesting habitat or favorable foraging habitat for Red-headed Woodpecker.

Although there is a sparse understory which is favored by Red-headed Woodpecker for foraging, the low abundance of mast-producing trees (e.g. oaks) does not provide an adequate acorn food source. In addition, snags that could provide an invertebrate food source are very limited on-site.

There is an overall absence of favored grove-like oak/hickory woodlands where nest sites are typically found within excavated cavities of dead trees or dead portions of live trees. There are two (2) relatively small areas on the site where oaks dominate; however, as is typical of successional woods in southern New Jersey, these areas contain a more established low shrub-layer component of blueberry and huckleberry that does not favor foraging for mast.

X. CONCLUSION

The property has been evaluated according to the regulations listed at *N.J.A.C. 7:15-5.26*. Presented below is a summary of the habitat assessment findings, please refer to the above section for more detailed discussions of habitat suitability for each of the five (5) threatened/endangered species subject of this report.

Correspondence dated June 30, 2011 from Mr. Bill Purdie, NJDEP Office of Land Use Planning Supervisor, states that an HSD for Barred Owl, Cope's Gray Treefrog, Corn Snake, Northern Pine Snake and Red-headed Woodpecker will need to be submitted for consideration of the site to be included in the City of Millville's Sewage Treatment Plant sewer service area (Refer to Appendix A for a copy of the letter). A subsequent email from Mr. Purdie on September 14, 2011 states the NJDEP notes there is no suitable habitat on-site for Cope's Gray Treefrog.

The subject property does not contain suitable habitat to harbor and support Barred Owl, Cope's Gray Treefrog, or Red-headed Woodpecker. Generally, the site does not contain suitable mature forest for Barred Owl; does not contain freshwater wetlands or breeding habitat for Cope's Gray Treefrog; and does not contain grove-like mast-producing habitat with snags for Red-headed Woodpecker. Due to the absence of nesting habitat for Barred Owl and Red-headed Woodpecker, and the absence of breeding habitat for Cope's Gray Treefrog, it is the finding of TEC that suitable habitat is not present. With an absence of all of the components required to sustain these three (3) species, the site cannot be considered suitable habitat in making the Habitat Suitability Determination under *N.J.A.C. 7:15 5.26 (c)*.

Generally, the habitat on-site is suitable for both Corn Snake and Northern Pine Snake. Favorable sandy soils (Lakewood, Evesboro) are mapped on-site and the vegetation community structure and composition are indicative of that typically favored by these snake species. However, all of the habitat components required to sustain these species do not appear to be present. Specifically nesting habitat, and possibly overwintering habitat (i.e. hibernacula), do not appear to be present for Northern Pine Snake; and there is a lack of a water source for Corn Snake.

Email correspondence from Mr. Bill Purdie, NJDEP Office of Land Use Planning, dated September 14, 2011, supports the absence conclusion for Corn Snake as it is indicated that there are no nearby occurrence records. For Northern Pine Snake however,

Habitat Suitability Determination Report

Block 578 * Lot 19

September 21, 2011

City of Millville, Cumberland County, New Jersey

Page 18 of 20

there are two occurrence records noted which are "off Rt. 55 directly adjacent to this site as well as along the northern border."

Due to the favorable habitat present for Northern Pine Snake, coupled with two occurrence records for this species immediately adjacent to the site, TEC recommends a survey be conducted to determine a presence/absence for the species on-site.

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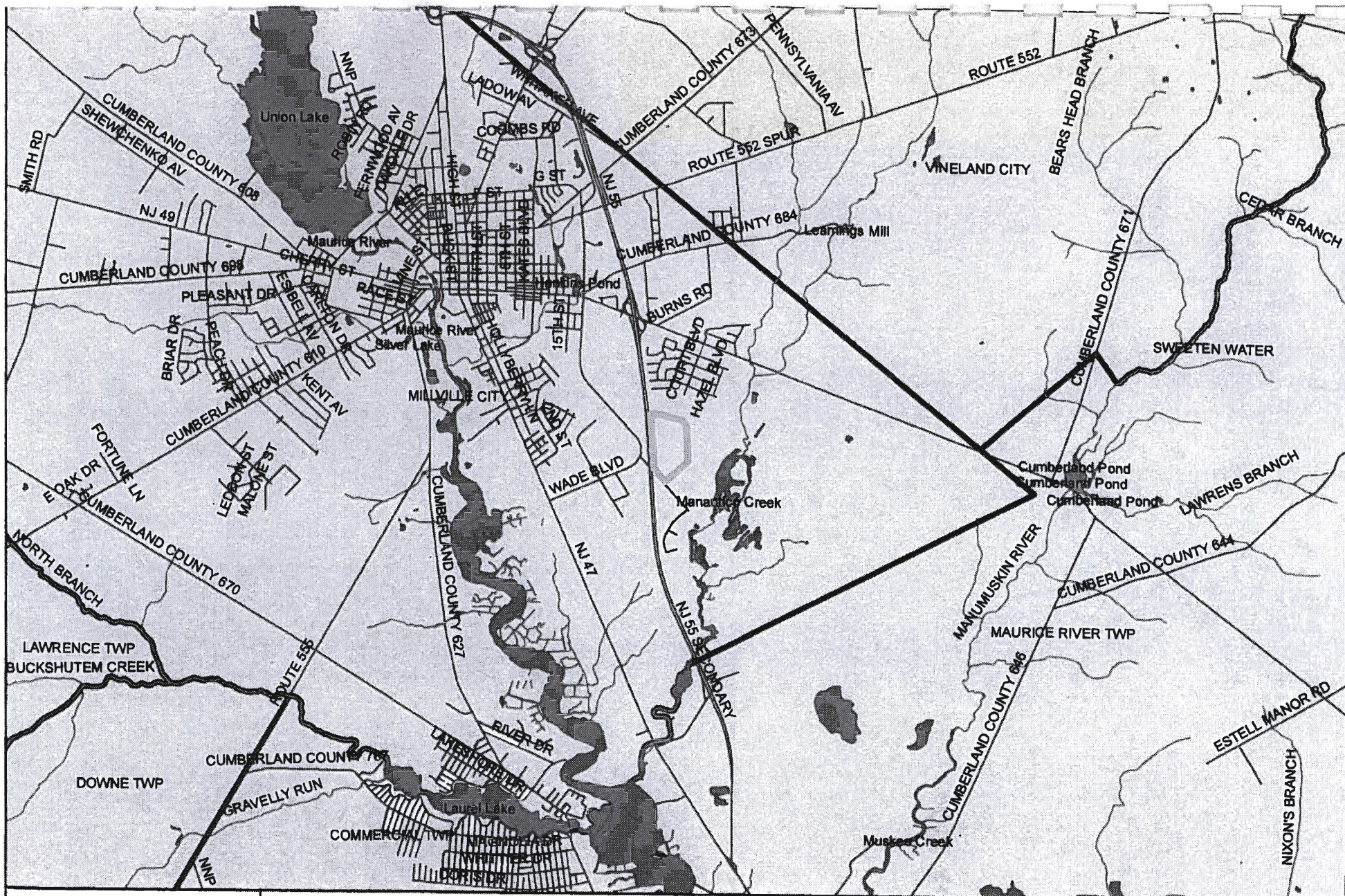
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FIGURES



134 S. New York Road
Galloway, NJ 08208
609-652-2002
609-652-3449 (fax)

Road Map

Block 578 * Lot 19
City of Millville, Cumberland County, New Jersey



Subject Property

Job No.: T1777.001

Scale: 1" = 1 mile

Date: 7/29/11

Drawn By: AJN

Source: NJDEP
This map was developed using Geographic Information Systems.
New Jersey Department of Environmental Protection Digital Data.
This secondary project has not been verified by the NJDEP and is
not state authorized. This map is for visual display purposes only
and all boundaries are approximate.

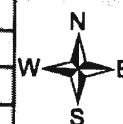


Figure 1



134 S. New York Road
Galloway, NJ 08205
609-652-2002
609-652-2449 (fax)

Aerial Map

Block 578 * Lot 19
City of Millville, Cumberland County, New Jersey



Subject Property

Job No.: T1777.001

Scale: 1" = 600'

Date: 7/29/11

Drawn By: AJN

Source: NJDEP
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New Jersey Department of Environmental Protection Digital Data.
This boundary printed line has not been verified by the NJDEP and is
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and all locations are approximate.

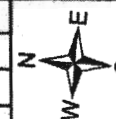


Figure 2



124 B. New York Road
Galloway, NJ 08205
609-652-2002
609-652-2449 (fax)

U.S.G.S. Quadrangle Map

Millville, Dividing Creek, Five Points & Port Elizabeth Quads

Block 578 * Lot 19

City of Millville, Cumberland County, New Jersey



Subject Property

Job No.: T1.001

Scale: 1" = 2,000'

Date: 7/29/11

Drawn By: AJN

Source: NJDEP
This map was developed using Geographic Information Systems, New Jersey Department of Environmental Protection Data. This secondary product has not been verified by the NJDEP and is not state certified. This map is for visual display purposes only and all boundaries are approximate.

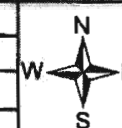



Figure 3

Legend

State Planning Area

SPDETAIL

-  COUNTY PARK
-  COUNTY PARK P2
-  ELLIS ISLAND- NJ
-  ELLIS ISLAND- NY
-  ENV. SENSITIVE BARRIER IS
-  ENVIRONMENTALLY SENSITIVE
-  FED PARK- CROSS ACC.
-  FEDERAL PARK
-  FRINGE
-  METROPOLITAN
-  MILITARY
-  MUNICIPAL PARK ENDORSE
-  NATIONAL PARK- CROSS ACC.
-  NEW JERSEY MEADOWLANDS
-  PARK 1ST & 2ND PLAN
-  PARK 1ST PLAN
-  PARK 2ND PLAN
-  PINELANDS
-  RURAL
-  RURAL ENV. SENSITIVE
-  STATE PARK
-  SUBURBAN
-  WATER



134 S. New York Road
Galloway, NJ 08205
609-652-2002
609-652-2449 (fax)

State Planning Area Map

Block 578 * Lot 19
City of Millville, Cumberland County, New Jersey



Subject Property

Job No.: T1.001

Scale: 1" = 1,000'

Date: 7/29/11

Drawn By: AJN

Source: NJDEP
This map was developed using Geographic Information System (GIS) data from the New Jersey Department of Environmental Protection (NJDEP). The accuracy of this map has not been verified by the NJDEP and is not to be used for any purpose other than display purposes only and all boundaries are approximate.

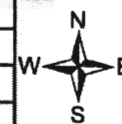
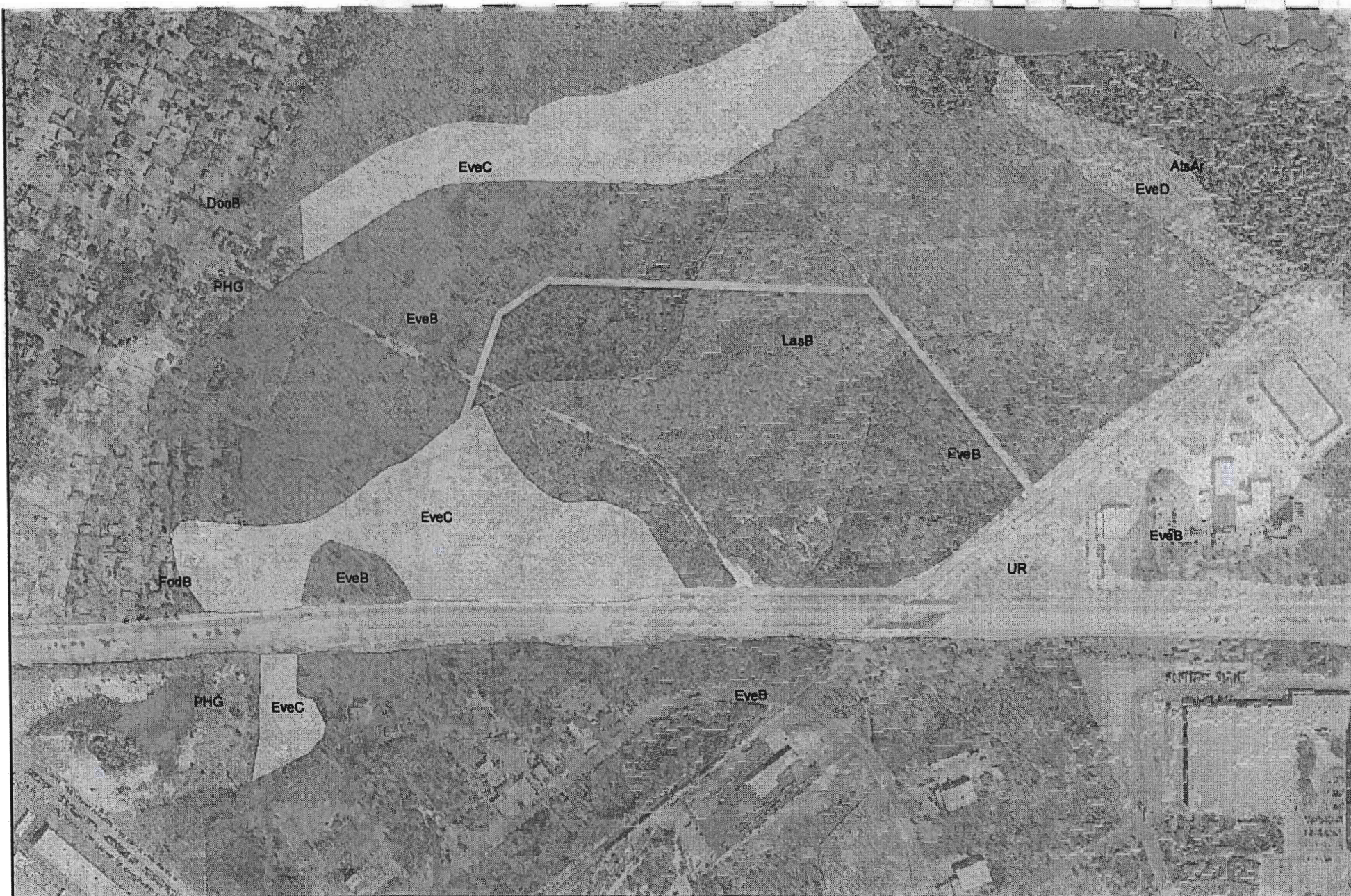


Figure 4



134 S. New York Road
Galloway, NJ 08205
609-652-2002
609-652-2449 (fax)

Soil Survey Map

Block 578 * Lot 19
City of Millville, Cumberland County, New Jersey



Subject Property

Job No.: T1777.001

Scale: 1" = 600'

Date: 7/29/11

Drawn By: AJN

Source: NJDEP
This map was developed using Geographic Information Systems, New Jersey Department of Environmental Protection Digital Data. This summary project has not been verified by the NJDEP and is not state official data. This map is for visual display purposes only and all locations are approximate.

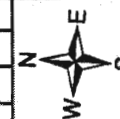
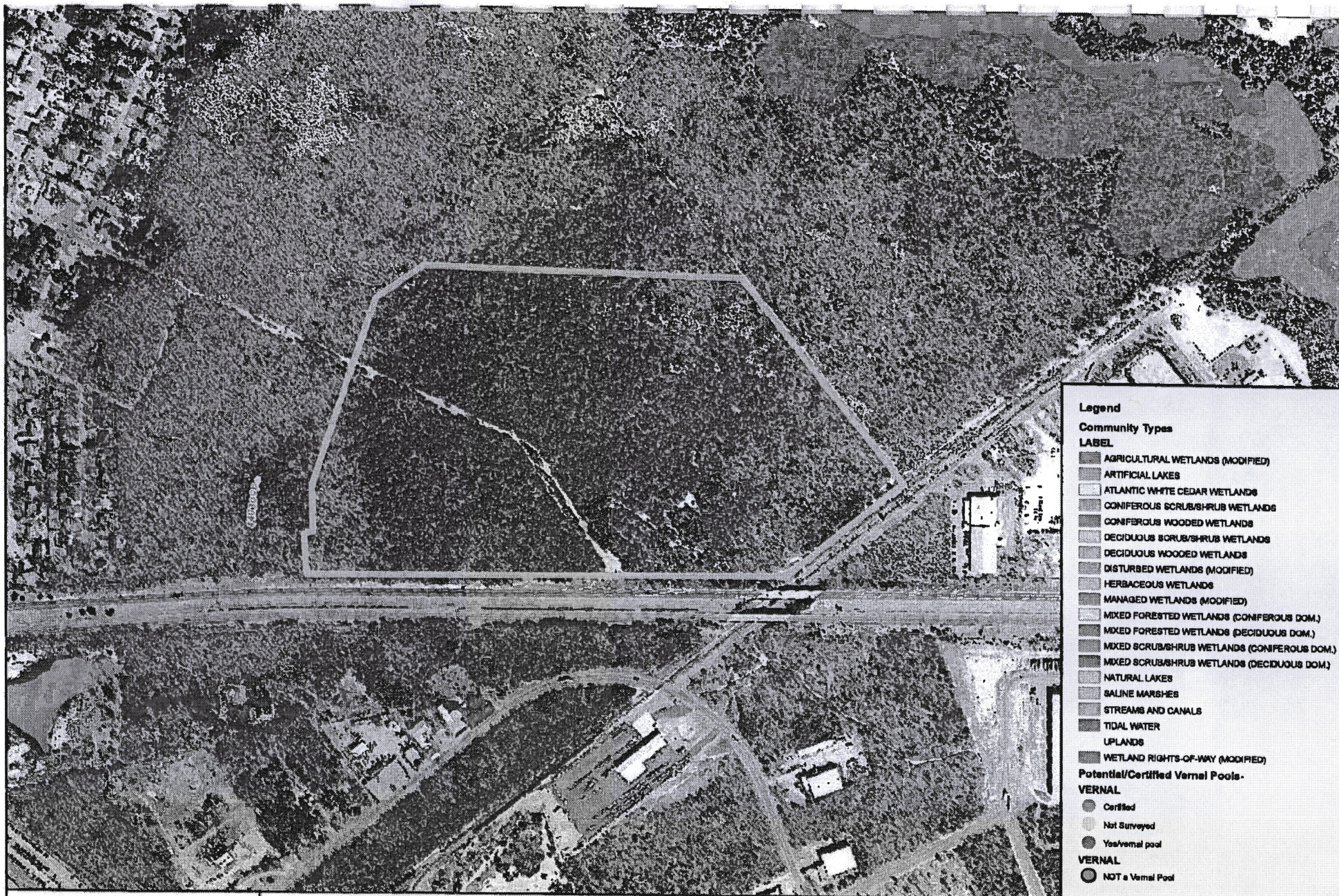


Figure 5



Legend

Community Types

LABEL

- AGRICULTURAL WETLANDS (MODIFIED)
- ARTIFICIAL LAKES
- ATLANTIC WHITE CEDAR WETLANDS
- CONIFEROUS SCRUB/SHRUB WETLANDS
- CONIFEROUS WOODED WETLANDS
- DECIDUOUS SCRUB/SHRUB WETLANDS
- DECIDUOUS WOODED WETLANDS
- DISTURBED WETLANDS (MODIFIED)
- HERBACEOUS WETLANDS
- MANAGED WETLANDS (MODIFIED)
- MIXED FORESTED WETLANDS (CONIFEROUS DOM.)
- MIXED FORESTED WETLANDS (DECIDUOUS DOM.)
- MIXED SCRUB/SHRUB WETLANDS (CONIFEROUS DOM.)
- MIXED SCRUB/SHRUB WETLANDS (DECIDUOUS DOM.)
- NATURAL LAKES
- SALINE MARSHES
- STREAMS AND CANALS
- TIDAL WATER
- UPLANDS
- WETLAND RIGHTS-OF-WAY (MODIFIED)

Potential/Certified Vernal Pools-

VERNAL

- Certified
- Not Surveyed
- Yes/Vernal pool
- NOT a Vernal Pool

Job No.: T1.001

Scale: 1" = 600'

Date: 7/29/11

Drawn By: AJN

Source: NJDEP
This map was developed using Geographic Information Systems.
New Jersey Department of Environmental Protection Digital Data.
This boundary project has not been verified by the NJDEP and is
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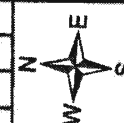


Figure 6



134 S. New York Road
Galloway, NJ 08205
609-652-2002
609-652-2449 (fax)

TRIDENT
ENVIRONMENTAL
CONSULTANTS
Subsidiary Member of
Environmental and Ecological
Consulting and Planning

NJDEP Freshwater Wetlands Map

Block 578 * Lot 19

City of Millville, Cumberland County, New Jersey



Subject Property



Pine-oak Vegetation Community

small oak-pine areas



134 S. New York Road
Galloway, NJ 08205
609-652-2002
609-652-2449 (fax)

Vegetation Communities Map

Block 578 * Lot 19
City of Millville, Cumberland County, New Jersey



Subject Property

Job No.: T1777.001

Scale: 1" = 400'

Date: 7/29/11

Drawn By: AJN

Source: NJDEP
This map was developed using Geographic Information Systems, New Jersey Department of Environmental Protection Digital Data. This secondary project has not been verified by the NJDEP and is not data authorized. This map is for visual display purposes only and all features are a generalization.

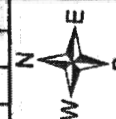


Figure 7

Shiloh Marl Member

Cohansey Formation

Wildwood Member

Belleplain Member

Belleplain Member



134 E. New York Road
Galloway, NJ 08205
609-652-2002
609-652-2449 (fax)

Bedrock Geology Map

Block 578 * Lot 19
City of Millville, Cumberland County, New Jersey



Subject Property

Job No.: T1.001

Scale: 1" = 2 miles

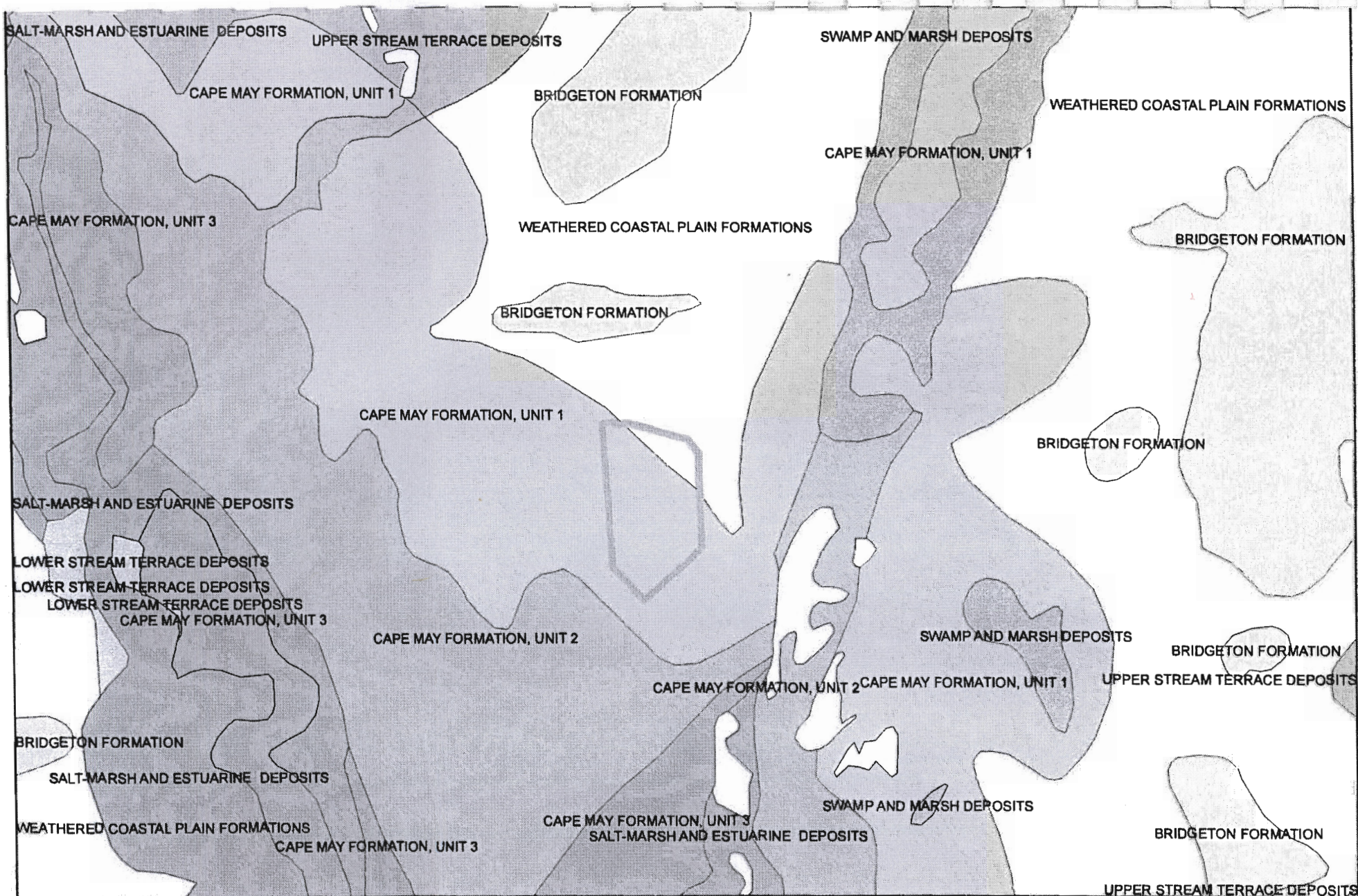
Date: 7/29/11

Drawn By: AJN

Source: NJGSP
This map was developed using Geographic Information Systems, Mill Jersey Department of Environmental Protection Digital Data. This secondary product has not been verified by the NJGSP and is not state authorized. This map is for visual display purposes only and all locations are approximate.



Figure 8



134 S. New York Road
Galloway, NJ 08205
609-652-2002
609-652-2449 (fax)

TRIDENT
ENVIRONMENTAL
CONSULTANTS

Subsidiary Service to
Environmental and Engineering
Consulting and Planning

Surficial Geology Map

Block 578 * Lot 19
City of Millville, Cumberland County, New Jersey



Subject Property

Job No.: T1.001

Scale: 1" = 2,000'

Date: 7/29/11

Drawn By: AJN

Source: NJCEP
This map was developed using Geographic Information Systems, New Jersey Department of Environmental Protection Digital Data. This boundary project has not been verified by the NJCEP and is not state authorized. This map is for visual display purposes only and all boundaries are approximate.



Figure 9



134 S. New York Road
Galloway, NJ 08205
609-652-2002
609-652-2449 (fax)

0.25 Mile Radius Map

Block 578 * Lot 19
City of Millville, Cumberland County, New Jersey



0.25 mile radius

Subject Property

Job No.: T1777.001

Scale: 1" = 1,000'

Date: 7/29/11

Drawn By: AJN

Revised: N/A
This map was developed using Geographic Information Systems, New Jersey Department of Environmental Protection Digital Data. This secondary project has not been verified by the NJDEP and is not state authorized. This map is for visual display purposes only and all features are approximate.



Figure 10

Legend

emergent RANK

- Suitable Habitat (1)
- Priority Species (2)
- State Threatened (3)
- State Endangered (4)
- Federal T and E (5)

grassland RANK

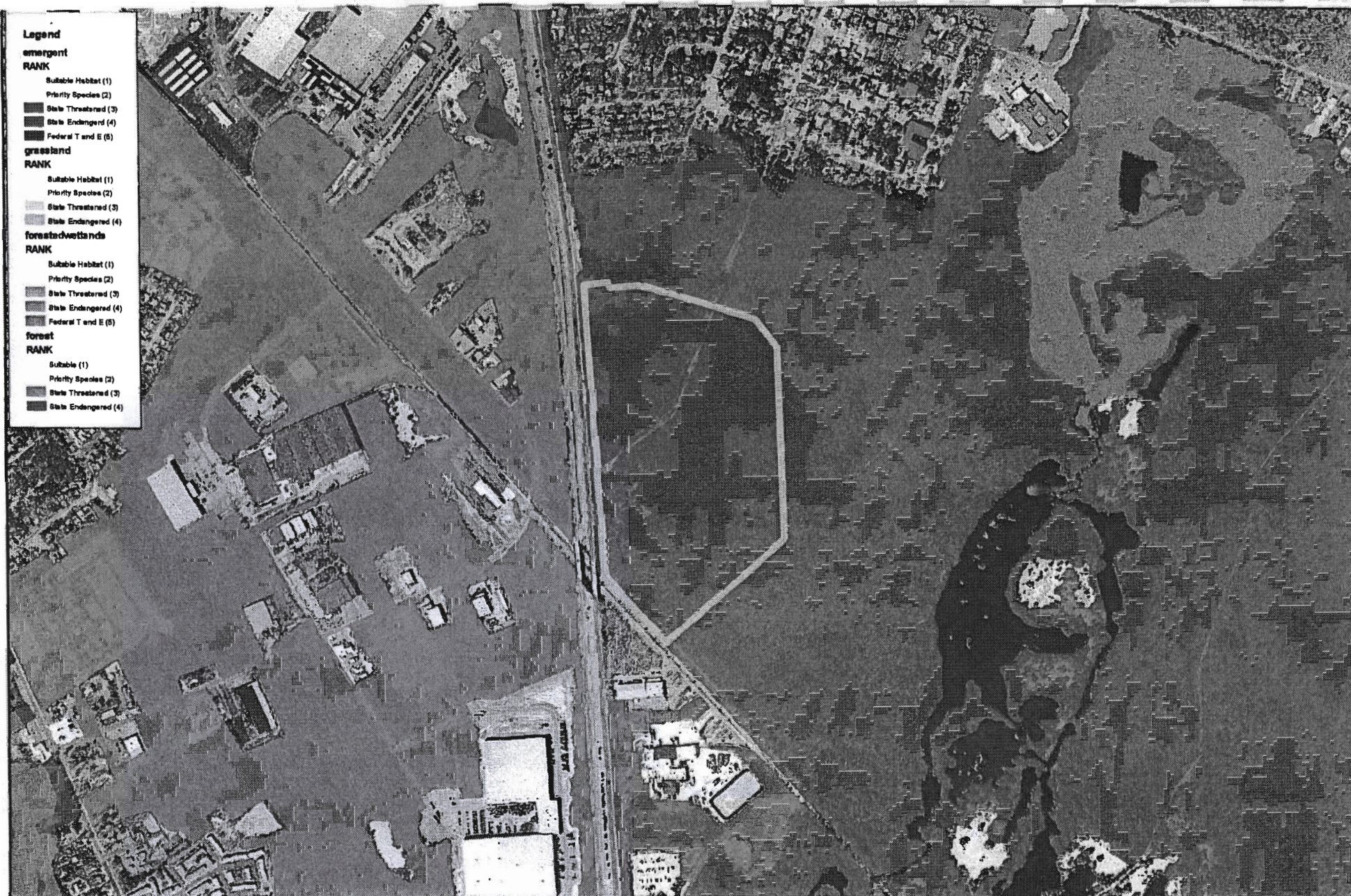
- Suitable Habitat (1)
- Priority Species (2)
- State Threatened (3)
- State Endangered (4)

forested wetlands RANK

- Suitable Habitat (1)
- Priority Species (2)
- State Threatened (3)
- State Endangered (4)
- Federal T and E (5)

forest RANK

- Suitable (1)
- Priority Species (2)
- State Threatened (3)
- State Endangered (4)



134 S. New York Road
Millway, NJ 08205
609-652-2002
609-652-2449 (fax)

Landscape Project (v.2.1) Map

Block 578 * Lot 19
City of Millville, Cumberland County, New Jersey



Subject Property

Job No.: T1.001

Scale: 1" = 1,000'

Date: 7/29/11

Drawn By: AJN

Source: NJDEP
This map was developed using Geographic Information Systems,
New Jersey Department of Environmental Protection Digital Data.
The secondary project has not been verified by the NJDEP and is
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and all locations are approximate.

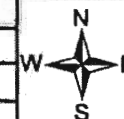


Figure 11

APPENDIX A



State of New Jersey

CHRIS CHRISTIE
Governor

Division of Land Use Planning
Office of Land Use Planning
PO Box 420
Mail Code 401-071
Trenton, New Jersey 08625-0420
Tel: (609) 984-6888
Fax: (609) 984-6505

BOB MARTIN
Commissioner

KIM GUADAGNO
Lt. Governor

JUN 30 2011

Mike Griffith
901 South Wade Boulevard
Millville, NJ 08332

Re: Block 578, Lot: 16, 19
City of Millville, Cumberland County
Watershed Management Area #17
Cumberland County Wastewater Management Plan (WMP)
Lower Delaware Water Quality Management Plan (WQMP)

Dear Mr. Griffith:

The Department of Environmental Protection (Department) received your request and documentation on April 29, 2011 for inclusion of the above referenced properties into the City of Millville Sewage Treatment Plant (STP) sewer service area pursuant to Administrative Order No. 2010-03. The Department reviewed your request and has determined that additional information is needed before the Department can make a determination. Please submit the following:

Threatened and Endangered Species Habitat

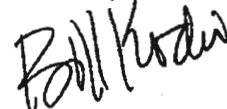
The Department has determined that the above referenced property includes State Threatened and Endangered Species Habitat for the Red-Headed Woodpecker, Cope's Gray Treefrog, Northern Pine Snake, Corn Snake, and Barred Owl as identified by the Department's Landscape Project. The Division of Fish and Wildlife's Endangered and Nongame Species Program developed the Landscape Project, which identifies State and Federal listed Endangered and Threatened Species habitat.

Therefore, in order for the Department to consider it's inclusion into the City of Millville STP sewer service area, a Habitat Suitability Determination request (HSD) must be submitted to the Department for review. The section of the Water Quality Management Planning rule (N.J.A.C. 7:15-5.26) that describes the contents of a HSD application is

available on the Department's web site at http://www.nj.gov/dep/rules/rules/njac7_15.pdf on page 80. This section of the WQMP rule describes the information that must be submitted by an applicant in order for the Department to re-evaluate the finding that a site is constrained for threatened and endangered species habitat. This HSD application must evaluate potential impacts to the above listed species.

The Cumberland County WMP adoption process must continue to progress. Based on the timing of the submission of additional information justifying the inclusion of the parcel(s) into the sewer service area, the WMP may be at such a point that inclusion into the WMP's sewer service area may not be possible in the current WMP proposal. If the County has proceeded to a point beyond build-out analysis and formal submission of the WMP is imminent the above mentioned property *may* be able to be included in the sewer service area at a later date through a site specific amendment or revision pursuant to N.J.A.C. 7:15. If you have any other questions, or require further assistance, please contact the Project Reviewer, Jaime Corbett at (609) 984-0361.

Sincerely,



Bill Purdie, Supervisor
Office of Land Use Planning

C: via email
Bob Brewer, Cumberland County Department of Planning and Development
City of Millville Clerk
John Knoop, City of Millville Municipal Engineer
Jaime Corbett, NJDEP, DLUP, OLUP
Office of Land Use Planning - File

APPENDIX B

Trident Environmental Consultants
Block 578 * Lot 19
City of Millville, Cumberland County, New Jersey



1. Looking southeast along adjacent railroad line.



2. Looking northwest along adjacent railroad line.

Trident Environmental Consultants
Block 578 * Lot 19
City of Millville, Cumberland County, New Jersey



3. Looking southeast along Gorton Road.



4. Looking northwest along Gorton Road.

Trident Environmental Consultants
Block 578 * Lot 19
City of Millville, Cumberland County, New Jersey



5. View of subject property from adjacent railroad line.



6. Vegetation community present on-site.

Trident Environmental Consultants
Block 578 * Lot 19
City of Millville, Cumberland County, New Jersey



7. Pine-oak woodlands located on subject property.



8. Bare open sand area located immediately adjacent to Route 55 Freeway.

Trident Environmental Consultants
Block 578 * Lot 19
City of Millville, Cumberland County, New Jersey



9. Storm sewer intersecting the site.



10. Open bare sand area on-site.

Trident Environmental Consultants
Block 578 * Lot 19
City of Millville, Cumberland County, New Jersey



11. Rotten log and associated stump hole.



12. Pine stump hole present on-site.

Trident Environmental Consultants
Block 578 * Lot 19
City of Millville, Cumberland County, New Jersey



13. Railroad tie pile located along adjacent railroad line.



14. Woodland trail present on subject property.

APPENDIX C

Albert J. Newman
Senior Biologist
Project Manager

Trident Environmental Consultants
134 South New York Road
Galloway, NJ 08205

Education:

B.S. Environmental Studies,
The Richard Stockton College
of New Jersey, 1998

Certifications:

Professional Wetland Scientist,
Society of Wetland Scientists

Commercial pesticide
applicator - NJDEP Pesticide
Control Program, category
certifications in Aquatic,
Forest, and Right-of-Way
management (License #
28655B)

Fields of Competence / Professional Experience:

Mr. Albert J. Newman is a Senior Biologist and Environmental Scientist responsible for conducting all faunal and floral threatened & endangered species Phase I (habitat suitability assessments), Phase II (presence/absence), and Phase III (population studies) sampling investigations. Mr. Newman has conducted numerous studies throughout the State of New Jersey for many threatened and endangered reptiles, amphibians, and birds, as well as mammals and invertebrates.

Mr. Newman also has conducted all aspects of Bog Turtle surveys in New Jersey, New York, Pennsylvania, and Delaware. In addition to site suitability analyses and directed visual surveys, such Bog Turtle experience includes implementation of various trapping methods in a variety of habitats, radio-telemetry projects, and habitat management and restoration. Mr. Newman has assisted in implementing invasive species control programs to manage documented Bog Turtle habitat in Great Swamp National Wildlife Refuge, Basking Ridge, Morris County, NJ; Walkill National Wildlife Refuge, Sussex, Sussex County, NJ; and Island Beach State Park, Seaside Park, Ocean County, NJ.

Mr. Newman has conducted radio-telemetry studies for Northern Pine Snakes over successive seasons in conjunction with applications for development within the Pinelands Commission jurisdictional area, and for Eastern Box Turtle, a State of New Jersey species of Special Concern, as a privately funded research project.

Mr. Newman is also well versed in identification of threatened/endangered flora (plant species). He has conducted numerous surveys for various State and Federally listed plant species, and all of the Pinelands threatened/endangered flora listed within the Pinelands Commission Comprehensive Management Plan (CMP) on lots of less than one (1) acre in size to tracts encompassing over one thousand (1,000) acres.

Mr. Newman has also assisted in performing surveys for Indiana Bat including mist-netting trapping surveys and identification/data collection of captured bats.

Additionally, Mr. Newman has experience delineating freshwater wetlands and land use permitting including applications for Letters of

Interpretation (L.O.I), Waterfront Development Permits, CAFRA Permits, and various Statewide General Permits for submission to the New Jersey Department of Environmental Protection (NJDEP). Mr. Newman implements and conducts woodland management surveys and manages the plans until Township approval; prepares Environmental Impact Statements (EIS) for Township approval; and has worked on successful wetland mitigation projects within the State of New Jersey.

Overall, Mr. Newman has a breadth of state and federal agency regulatory compliance experience for utility and infrastructure, resource extraction, municipal, and commercial and residential development projects.

In 2005 Mr. Newman began managing Trident Environmental Consultants southern office located in Galloway, New Jersey.

Formal Education:

Mr. Albert J. Newman received a Bachelor of Science (B.S.) degree in Environmental Studies from The Richard Stockton College of New Jersey, with the honor of Program Distinction, in May of 1998. While attending Richard Stockton College, Mr. Newman selected such upper-level courses as Wildlife Biology, Mammalogy, Dendrology, and Soil Science.

Mr. Newman has an educational background with conducting wetland research. During his senior year, Albert conducted a two-semester palynological study involving the sampling and laboratory analysis of historic organic soils of Wharton State Forest, New Jersey, dated to 10,000 years before present in an effort to identify population migration northward of Atlantic white-cedar following glacial retreat.

Following graduation, Mr. Newman served as a graduate level research assistant to Dr. George Zimmerman, Professor and Environmental Studies Program Coordinator of The Richard Stockton College of New Jersey. This position included heading a dendrochronological study of a historic Atlantic white-cedar stump forest in the Hackensack Meadowlands, as well as conducting shade/photosynthesis experiments of common wetland canopy species within Stockton's arboretum.

Expert Testimony:

Mr. Newman has provided expert threatened/endangered species testimony at Atlantic County Supreme Court; municipal planning boards; and environmental commissions. Additionally, he has been intricately involved in many projects in litigation requiring a mitigation component and/or project modifications to offset or minimize impacts to threatened/endangered flora and fauna.

Trial Court: Atlantic County Supreme Court

Planning Boards: Egg Harbor Township, Atlantic County, N.J.; Pilesgrove, Mannington and Pittsgrove Townships, Salem County, N.J.; Jackson and Plumsted Townships, Ocean County, N.J.; Pemberton Township, Burlington County, N.J.

Environmental Commissions: Howell Township, Monmouth County, N.J.; Hamilton Township, Atlantic County, N.J.

Related Experience & Qualifications:

- Attended course entitled "Rare Plants of the Pine Barrens" from April through October 2005, sponsored by Pinelands Preservation Alliance (PPA).
- Attended course entitled "Rare Plants of the Pine Barrens" from March through October 2007, sponsored by Pinelands Preservation Alliance (PPA).
- Volunteer with the NJDEP Wildlife Conservation Corps on the Vernal Pool Project, the Herpetile Atlas, and the Timber Rattlesnake Project.
- Conducts numerous ecological surveys with the New Jersey Department of Environmental Protection (NJDEP) Endangered & Nongame Species Program (ENSP) and other qualified herpetologists, ornithologists, and wildlife biologists.
- Completed Cook College Professional Education course Threatened/Endangered Species of Northern New Jersey (March 2003).
- Completed Cook College Professional Education course Winter Vegetation Identification – North (November 2003).

- Attended 2003 Northeast Bat Working Group (NEBWG) Conference at Williams Lake mine complex, Rosendale, New York. This workshop focused on various aspects of Indiana Bat (*Myotis sodalis*) biology.
- Attended 2004 New Jersey Grassland Habitat Symposium in Franklin Township, Somerset County, New Jersey hosted by New Jersey's Endangered and Nongame Species Program and the New Jersey Audubon Society.
- Attended the Second Workshop on the Conservation of Maryland's Bog Turtles / Third Annual Bog Turtle Surveyors' Meeting at Jug Bay Wetlands Sanctuary, Lothian, Maryland (February 2006)
- Attended the Fourth Annual Bog Turtle Surveyors' Meeting at Pocono Environmental Education Center, Pennsylvania (February 2007)
- Completed Cook College Professional Education course Wetland Construction Design (November 2004)
- Completed Cook College Professional Education course On-site Wastewater Disposal (May 2002)
- Provided demonstration on various Bog Turtle trapping techniques at DNR volunteer trapping seminar/effort summer 2008.

Projects of Relevance:

2001-2003 Lumley Tract – Berkeley Twp., Ocean Co., NJ

Capture northern pine snakes; snake trapping; threatened/endangered bird surveys; locate pine snake hibernacula; radio-track target snake individuals throughout active season from spring emergence to fall ingress.

2002-2006 650 acre tract – Pemberton Twp., Burlington Co., NJ

Capture northern pine snakes; snake trapping; threatened/endangered bird and plant surveys; locate pine snake hibernacula; locate barred owl nest; radio-track target snake individuals throughout active season from spring emergence to fall ingress.

2003 Tennessee Gas Pipeline – Wantage Twp., Sussex Co., NJ
Perform Phase II bog turtle surveys for low potential dig site.

2003 South Jersey Gas – Estell Manor, Atlantic Co., NJ
Perform habitat assessment for threatened/endangered species and conduct directed surveys for northern pine snake, treefrogs, and birds.

2004-2007 A.C. Electric Co. Cumberland-Dennis Transmission Line Upgrade
Conduct preliminary habitat suitability assessment for threatened/endangered flora and fauna; perform directed surveys; delineate threatened/endangered plant populations for protective initiative during construction phases; oversee and manage internal staff for environmental monitoring.

2004-2005 A.C. Electric Co. Cardiff-Lewis Transmission Line
Conduct preliminary habitat suitability assessment for threatened/endangered flora and fauna; perform directed surveys for threatened/endangered treefrogs and birds.

2006-Present A.C. Electric Co. Oyster-Creek Cardiff Transmission Line
Conduct 3-year wetland mitigation monitoring for compliance with NJDEP and Army Corps of Engineers. Monitor and study changes in habitat with respect to threatened/endangered species over 3-year study period following construction of new utility line.

2007 A.C. Electric Co. Corson Middle-Lake Transmission Line
Evaluate raptor nest on existing structure and provide recommendations for removal.

2006-2007 A.C. Electric Co. Monroe-Williamstown Transmission Line Upgrade
Conduct preliminary habitat suitability assessment for threatened/endangered flora and fauna; perform directed survey for barred owl; identify presence of target species and nest location.

2007 A.C. Electric Co. Mickelton-Trainor Transmission Line
Conduct preliminary habitat suitability assessment for threatened/endangered flora and fauna; perform directed surveys.

2006-2008 A.C. Electric Co. Union-Corson Transmission Line Upgrade
Conduct preliminary habitat suitability assessment for threatened/endangered flora and fauna; perform directed surveys; delineate threatened/endangered plant populations for protective initiative during construction phases; oversee and manage internal staff for environmental monitoring.

Conducted habitat suitability assessments for threatened, endangered, and in need of conservation flora and fauna in Calvert County, Dorchester County, and Somerset County, MD.

Conducted field inspection of avian nest atop utility pole structure in Cecil County, MD, determined likely species associated with nest, and provide recommendations for removal.

Professional Affiliations:

Member, Society of Wetland Scientists 2005 - Present

Member, New Jersey Department of Environmental Protection, Division of Fish, Game and Wildlife Conservation Corps. 2002 - Present

Member, Association of State Wetland Managers 2005 - Present

Member, New Jersey Audubon Society 2005-Present

Member, Association of Field Ornithologists

Member, American Ornithologists Union

Bryon DuBois
Senior Biologist
Senior Project Manager

Trident Environmental Consultants
1856 Route 9
Toms River, NJ 08755

Education:

B.S. Biology & Ecology,
West Chester University, 1993

Certifications:

Professional Wetland Scientist
Society of Wetland Scientist,
1997

Certified Ecologist, The
Ecological Society of America,
1998

Recognized Qualified Bog
Turtle Surveyor – N.J., N.Y.,
P.A., D.E., M.D., 1997

Recognized Qualified Indiana
Bat Surveyor – N.J., N.Y.,
P.A., 2006

Certified Subsurface Evaluator
NJDEP# 0001940, 1996

Fields of Competence:

Mr. DuBois has over 16 years experience in the fields of regulatory compliance, ecology, biology, wetland science, wildlife management hydrology and habitat restoration. He has managed numerous large scale projects through the approval process in accordance with New Jersey Department of Environmental Protection, Army Corp of Engineers, N.J. Pinelands Commission and U.S. Fish and Wildlife. Mr. DuBois is highly respected by the regulatory agencies in N.J. and surrounding states. He has made positive contributions to policies effecting protected species (both state and federal) wetland mitigation, regulation coastal zone policies under CAFRA and water quality.

Professional Experience:

Mr. DuBois' background stemmed from the U.S. Environmental Protection Agency where he served as a sample technician on many superfund projects. As a supplement to that position he took lead in assessing water quality, habitat variations, wetlands and species impacts. From 1995 to 2000 he spent long hours performing assessments, delineations and investigations for properties that were proposed for housing and commercial uses. In preparing these properties for subdivision or site plan approval, Mr. DuBois became very familiar with New Jersey's regulation on water quality, stormwater management, environmental impacts, protected species and coastal zone development. Projects ranged in size from minor subdivisions to a 1,486 lot active adult community with a championship golf course. Mr. DuBois' larger clients included DR Horton, Lennar, Centex, Pulte Homes, Beazer Homes and a host of smaller developers.

In 2000 Mr. Bryon DuBois created Trident Environmental Consultants to focus on more objective ecological and environmental issues while maintaining the development communities' base. At that time he performed numerous long term studies on several influential species such as Bog Turtles, Pine Snakes, and Indiana Bats along with assessments of habitat and creation of mitigation measures. In addition, Mr. DuBois began designing and managing the construction of wetland mitigation projects tailored to a specific habitat type or land use. In many instances the projects were approved and exceeded the standard requirements without increasing cost for the client. These mitigation projects helped Mr. DuBois in being nominated to the State of New Jersey's Wetland

Bryon DuBois
Senior Biologist
Senior Project Manager

Mitigation Council in 2003 by the Governor of New Jersey. Since that time Mr. DuBois has reviewed and received approval for numerous mitigation related projects and banks in New Jersey and Pennsylvania.

From 2003 to the present day Mr. DuBois has successfully managed, designed and received approval for projects ranging from airports to industrial centers, wastewater management facilities and large commercial areas along with the residential component. He has been asked to present topics related to N.J. development regulations at the Atlantic City Builders Convention, the Eastern Region Airports Conference in Hershey, Pennsylvania, the U.S. Fish and Wildlife Bog Turtle Convention, the N.J. Pinelands Commission, the Louisiana Fish and Game and dozens of planning boards in towns across N.J. and P.A. His diverse experience has made him a good candidate to speak publicly on projects that require many different issues from ecology to water quality.

In addition to the above-referenced experience Mr. DuBois has completed 142 hours of wetland training through Rutgers University from 1997-2001. He has also completed training to include him with the Wildlife Conservation Corporation, Herpetile Atlas, NJDEP's Vernal Pond Project and is a member of the Timber Rattlesnake Recovery Unit in the State of New Jersey. Mr. DuBois has volunteered for numerous organizations and societies. He sat on his Township's Environmental Commission from 1995-2003 and is still a member of the N.J. Association for New Jersey Environmental Commissions (ANJEC). He has been selected throughout the past years for grant work with the USFWS's Walkill Refuge, Great Swamp Refuge, Edwin B. Forsyth Refuge and Supawna Wildlife Refuge.

Mr. DuBois has extensive experience using ESRI Arc Map Geographic Information Systems (GIS) software and global positioning systems. In addition, Mr. DuBois has held over 300 scientific collecting permits for surveys performed within the Mid-Atlantic States many of which involve a telemetry component. By using radio telemetry Mr. DuBois has accurately figured home ranges of many species and designed management plans accordingly. This knowledge has helped both developers and environmentalists protect critical habitats that are crucial to specific populations.

Through hard work and an extensive background as an outdoorsman, Mr. DuBois has been recognized as a leader in his field. He has held a N.J. Trappers License since the age of 12 and a resident hunting license since the age of 11. Mr. DuBois has applied logical and objective solutions to

Bryon DuBois
Senior Biologist
Senior Project Manager

some of the most difficult environmental projects and has met a balance between environmentalists and developers alike.

Professional Affiliations:

Member, Society of Wetland Scientists 1997 - Present
Member, The Ecological Society of America 1998 - Present
Member, New Jersey Department of Environmental Protection, Division of Fish, Game and Wildlife Conservation Corps. 2000 - Present
Member, Pine Beach Environmental Commission 1995 - 2003
Wetland Mitigation Council 2003 - Present
New Jersey Builders Association 1999 - Present
Shore Builders Association 2001 - Present
Association of N.J. Environmental Commission (ANJEC) 1995 - Present
N.J. Concrete & Aggregate Society 2003 - Present

Summary of Experience:

1995-1996

Residential subdivision approvals for over 54 projects in central New Jersey. Served as Environmental Project Manager on projects conducting the wetland studies and permitting.

1997

Added to the U.S.F.W.S. list of surveyors that are qualified to perform Bog Turtle surveys. Prepared applications on another 86 residential subdivisions including a 1,800 lot planned retirement community and 482 unit subdivision.

1998

Qualified as a Professional Wetland Scientist. Awarded Endangered Non-Game Species Program (ENSP) contract to perform Bog Turtle surveys throughout South Jersey. Managed and received approval on over 162 residential subdivisions in New Jersey and Pennsylvania. Participated in Pinelands workshop on endangered snake species. Passed certified subsurface evaluator certification standards from NJDEP. Conducted Army Corp of Engineers wetland training through Rutgers University. Began volunteer work with the Wildlife Conservation Corp.

1999

Managed the environmental department of employers firm and managed all projects with relation to applicable regulations. Began directed biological surveys on shellfish protected species and aquatic vegetation

Bryon DuBois
Senior Biologist
Senior Project Manager

and macro invertebrates. Spearheaded effort to gain approval for a 1,486 lot planned retirement community, with golf course. Planned environmental areas throughout community. Began environmental monitoring on undisturbed land. Continued work for NJDEP Endangered Non-Game Species Program (ENSP) on the threatened/endangered species. Prepared general permit plans and delineated wetlands on over 126 subdivisions or site plans in New Jersey, New York and Pennsylvania.

2000-2003

Formed Trident Environmental Consultants and began conducting large scale threatened/endangered studies for herpatile species throughout the northeast United States. Expanded project experience base down to Florida and began permitting on projects in North Carolina, Delaware, Maryland, New York and Pennsylvania. Subdivisions and site plan approvals gained on projects for National Homebuilders Lennar, Centex, DR Horton, Baker, Beazer and Pulte Homes; subdivisions ranged from 12 lots to roughly 2,000 units. Managed rapidly growing staff and payroll, maintaining active status in New Jersey Builders Association Environmental Commission, my Township Environmental Commission, and the Ecological Society of America.

2003-2007

Trident Environmental Consultants started up offices in Galloway Township, N.J., Stroudsburg, P.A. and Lancaster, P.A.. In addition, Mr. DuBois was chosen as member of the Wetland Mitigation Council based on wetland work performed from 1995-2003. Managed satellite offices and main work related to the entire firm. Prepared applications for mining industry in New Jersey and began long contract work with many mining operations in the Pinelands National Reserve. Projects of approval, included mining operations of 1,200 acres, 212 acres, 464 acres and 824 acres. In addition, was awarded contract work from Utilities Companies (gas & electric) throughout New Jersey, Pennsylvania, Delaware and Maryland. Staff includes specialists in botany, mammals, herpetology and ornithology. First N.J. biologist to be listed as a U.S.F.W.S. qualified bat biologist. Responsible for permitting and threatened/endangered approvals for upgrade and 3 transmission lines in New Jersey. Awarded contract by Superfund sites and two large N.J. airports to provide threatened/endangered assessments and reviews. Conducted presentation on Indiana Bats mortality at a National Airport Conference. Also presented at N.J. Builders Conference, Atlantic City, N.J..